PEFY-AF1200CFMR

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Unit Configuration

Model	PEFY-AF1200CFMR
Outdoor unit	PURY-P120TJMU-A(-BS)
	PURY-P120YJMU-A(-BS)
BC Controller	CMB-P106NU-G
	CMB-P108NU-G

Operating Temperature Range

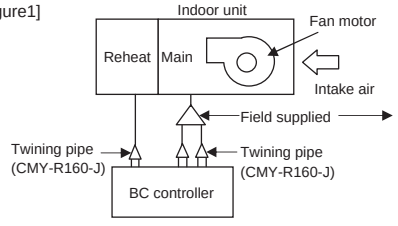
	Cooling	Heating
Indoor unit inlet air temperature	50 to 95°FW.B. (109°FD.B.)	-4 to 60°FW.B.
	10 to 35°CW.B. (43°CD.B.)	-20 to 15.6°CW.B.
Outdoor unit inlet air temperature	50 to 109°FD.B.	-4 to 60°FW.B.
	10 to 43°FD.B.	-20 to 15.6°CW.B.

Model			PEFY-AF1200CFMR
Power source			1-phase 208/230V 60Hz
Cooling capacity (Nominal)		BTU / h	112,000
		kW	32.8
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
Heating capacity (Nominal)		BTU / h	61,400
		kW	18
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
External finish			Galvanized
External dimension H x W x D		in.	18-9/16 x 49-1/4 x 55-1/8
		mm	470 x 1,250 x 1,400
Net weight		lbs (kg)	309 (140)
Heat exchanger			Cross fin (Aluminium fin and copper tube)
FAN	Type x Quantity		Sirocco fan x 2
	External static pressure	in.WG	0.28-0.48-0.80 (208V)
		Pa	70-120-200
		in.WG	0.52-0.72-0.96 (230V)
		Pa	130-180-240
	Motor type		Single phase induction motor
	Driving mechanism		Direct-driven
	Airflow rate	cfm	1,200
		L / s	566
Sound pressure level (Low-Mid-High) (measured in an anechoic room)		dB <A>	36-38-41 (208V)
		dB <A>	39-41-43 (230V)
Insulation material			Polyethylene foam, Polyurethane foam, Polystyrene foam
Air filter			Field supplied
Protection device			Fuse
Refrigerant control device			LEV
Connectable outdoor unit			PURY-P120TJMU-A(-BS), PURY-P120YJMU-A(-BS)
Diameter of refrigerant pipe (O.D.)	Liquid (R410A)	in. (mm)	3/8 (9.52) Brazed
	Gas (R410A)	in. (mm)	7/8 (22.2) Brazed
Diameter of drain pipe		in. (mm)	O.D. 1-1/4(32) x 2

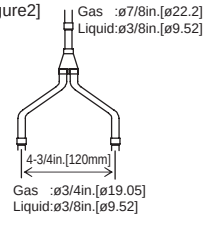
Notes:	
	1. Standard capacities are the maximum capacities that are obtained in the following conditions: Air conditions : cooling : indoor 87°FDB/80°FWB (30.5°CDB/26.7°CWB) outdoor 87°FDB(30.5°CDB) heating: indoor 32°FDB (0°CDB) outdoor 32°FDB (0°CDB)/28°FDB(-2°CWB), Connected outdoor unit is PURY-P120TJMU/YJMU-A(-BS) Piping length: 24.6 feet (7.5m) Height difference : 0 feet (0m)
	2. This value shows the data per unit.
	3. Sound pressure level is the data that was obtained in anechoic room by the following conditions: The measuring point is 4.9feet (1.5m) from the bottom of the unit that has 6.6feet (2m) outlet duct and 6.6feet (2m) intake duct.
	4. When combining the drain pipes, ensure that collected pipes are 3-15/16inch(10cm) lower than the unit body's drain port.
	5. Install BC controller in a location where refrigerant flow sound emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background sound, position the BC controller at least 16.4feet(5m) away from any indoor units.)
	6. When connecting the indoor unit to the BC controller, the optional twinning pipe shall be installed. (Refer to Figure1, Figure2, and Table1)
	7. The choice of indoor unit operation mode is limited to auto mode.

Piping Connection

[Figure1]



[Figure2]



[Table1]

Number of connection pipe of BC

Outdoor model	Main	Reheat
PURY-P120TJMU/YJMU-A(-BS)	4	2

2. SPECIFICATIONS

Model			PURY-P120TJMU-A(-BS) for use with PEFY-AF1200CFMR
Power source			3-phase 3-wire 208 / 230V ±10% 60Hz
Cooling capacity (Nominal) *1 (208-230)		BTU / h	112,000
	Power input	kW	11.9 (Estimated) *3
	Current input	A	30.8 / 27.8 *3
Temp. range of cooling	Outdoor	D.B.	23~115°F(-5~46°C)
Heating capacity (Nominal) *2 (208-230)		BTU / h	61,400
	Power input	kW	7.4 (Estimated) *3
	Current input	A	33.9 / 30.7 *3
Temp. range of heating	Outdoor	W.B.	-4~60°F(-20~15.5°C)
Sound pressure level (measured in anechoic room)		dB <A>	60.0
Refrigerant piping diameter	Liquid pipe	In. (mm)	3/4"(19.05) Brazed
	Gas pipe	In. (mm)	1-1/8"(28.58) Brazed
Fan	Type x Quantity		Propeller fan x 2
	Airflow rate	cfm	10,600
		m^3 / min	300
		L/s	5,000
	Control, Driving mechanism		Inverter-control, Direct-driven by motor
	Motor Output	kW	0.92 + 0.92
	External static pressure *4		0 in.WG (0 Pa) *4
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1
	Manufacturer		AC&R Works,MITSUBISHI ELECTRIC CORPORATION
	Operating Range		15-100%
	Starting method		Inverter
	Case heater	kW	0.045(230V)
	Lubricant		MEL32
External finish			Pre-coated galvanized steel sheet (+powder coating for -BS type) *5 <MUNSELL 5Y 8/1>
External dimension H x W x D		In.	64-31/32" x 68-29/32" x 29-15/16"
		mm	1,650 x 1,750 x760
Protection devices	High pressure protection		High pressure sensor,High pressure switch at 4.15MPa(601 psi)
	Inverter circuit (COMP. / FAN)		Over-heat protection,Over-current protection
	Compressor		Over-heat protection
	Fan motor		Thermal switch
Minimum Circuit Ampacity		A	49 / 46
Recommended Fuse/Breaker Size		A	50
Maximum Fuse Size		A	70 / 70
Refrigerant	Type x original charge		R410A x 26lbs + 1 oz (11.8kg)
	Control		Indoor LEV and BC controller
Net weight		lbs (kg)	695(315)
Heat exchanger			Salt-resistant cross fin & copper tube
HIC circuit (HIC: Heat Inter-Changer)			-
Defrost method			Auto-defrost mode (Reversed refrigerant cycle)
Drawing	External		WKB94T927
	Wiring		WKE94C375
Standard attachment	Document		Installation Manual
	Accessory		Details refer to External Drw
System Components			PEFY-AF1200CFMR Indoor Unit
			PURY-P120TJMU-A(-BS) Outdoor Unit
			Joint: CMY-R160-J
			BC controller: CMB-P106,108NU-G
Remark			Details on foundation work, duct work, insullation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. *3 For details on the electrical data needed for installing these units, see the R2-Series System Design section. *4 External static pressure is adjustable via dipswitch setting (0.12 in.WG, 0.24 in.WG / 30Pa, 60Pa). *5 For information on standard anti-corrosion protection and -BS treatment, see the R2-Series System Design section.

Notes:	
	1. Standard capacities are the maximum capacities that are obtained in the following conditions: Air conditions : cooling : indoor 87°FDB/80°FWB (30.5°CDB/26.7°CWB) outdoor 87°FDB(30.5°CDB) heating: indoor 32°FDB (0°CDB) outdoor 32°FDB (0°CDB)/28°FDB(-2°CWB), Connected outdoor unit is PURY-P120TJMU/YJMU-A(-BS) Piping length: 24.6 feet (7.5m) Height difference : 0 feet (0m)
	2. This value shows the data per unit.
	3. Sound pressure level is the data that was obtained in anechoic room by the following conditions: The measuring point is 4.9feet (1.5m) from the bottom of the unit that has 6.6feet (2m) outlet duct and 6.6feet (2m) intake duct.
	4. When combining the drain pipes, ensure that collected pipes are 3-15/16inch(10cm) lower than the unit body's drain port.
	5. Install BC controller in a location where refrigerant flow sound emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background sound, position the BC controller at least 16.4feet(5m) away from any indoor units.)
	6. When connecting the indoor unit to the BC controller, the optional twinning pipe shall be installed. (Refer to Figure1, Figure2, and Table1)
	7. The choice of indoor unit operation mode is limited to auto mode.

2. SPECIFICATIONS

Model			PURY-P120YJMU-A(-BS) for use with PEFY-AF1200CFMR
Power source			3-phase 3-wire 460V ±10% 60Hz
Cooling capacity (Nominal) *1 (208/230V)		BTU / h	112,000
	Power input	kW	11.9 (Estimated) *3
	Current input	A	13.9 *3
Temp. range of cooling	Outdoor	D.B.	23~115°F(-5~46°C)
Heating capacity (Nominal) *2 (208/230V)		BTU / h	61,800
	Power input	kW	7.4 (Estimated) *3
	Current input	A	15.3 *3
Temp. range of heating	Outdoor	W.B.	-4~60°F(-20~15.5°C)
Sound pressure level (measured in anechoic room)		dB <A>	60.0
Refrigerant piping diameter	High pressure	In. (mm)	3/4"(19.05) Brazed
	Low pressure	In. (mm)	1-1/8"(28.58) Brazed
Fan *3	Type x Quantity		Propeller fan x 2
	Air flow rate	cfm	10,600
		m^3 / min	300
		L/s	5,000
	Control , Driving mechanism		Inverter-control, Direct-driven by motor
	Motor output	kW	0.92+0.92
	External static pressure		0 in.WG (0 Pa) *4
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1
	Manufacturer		AC&R Works,MITSUBISHI ELECTRIC CORP.
	Operating Range		15-100%
	Starting method		Inverter
	Case heater	kW	0.045(230V)
	Lubricant		MEL32
External finish			Pre-coated galvanized steel sheet (+powder coating for -BS type) *5 <MUNSELL 5Y 8/1>
External dimension H x W x D		In.	64-31/32" x 68-29/32" x 29-15/16"
		mm	1,650 x 1,750 x760
Protection devices	High pressure protection		High pressure sensor,High pressure switch at 4.15MPa(601 psi)
	Inverter circuit (COMP. / FAN)		Over-heat protection,Over-current protection
	Compressor		Over-heat protection
	Fan motor		Thermal switch
Minimum Circuit Ampacity (MCA)		A	23
Recommended Fuse/Breaker Size		A	25
Maximum Fuse Size		A	30
Refrigerant	Type x original charge		R410A x 26lbs + 1 oz (11.8kg)
	Control		Indoor LEV and BC controller
Net weight		lbs (kg)	728(330)
Heat exchanger			Salt-resistant cross fin & copper tube
HIC circuit (HIC: Heat Inter-Changer)			-
Defrost method			Auto-defrost mode (Reversed refrigerant cycle)
Drawing	External		WKB94T935
	Wiring		WKE94C377
Standard attachment	Document		Installation Manual
	Accessory		Details refer to External Drw
System Components			PEFY-AF1200CFMR Indoor Unit
			PURY-P120YJMU-A(-BS) Outdoor Unit
			Joint: CMY-R160-J
			BC controller: CMB-P106,108NU-G
Remark			Details on foundation work, duct work, insullation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. *3 For details on the electrical data needed for installing these units, see the R2-Series System Design section. *4 External static pressure is adjustable via dipswitch setting (0.12 in.WG, 0.24 in.WG / 30Pa, 60Pa). *5 For information on standard anti-corrosion protection and -BS treatment, see the R2-Series System Design section.

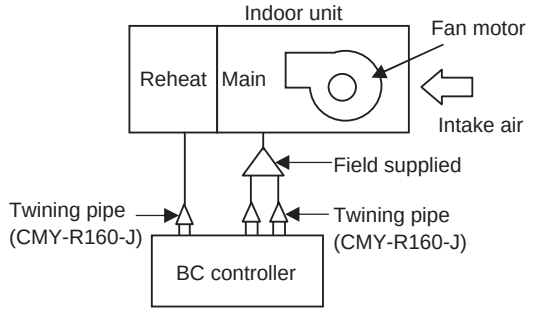
Notes:	
	1. Standard capacities are the maximum capacities that are obtained in the following conditions: Air conditions : cooling : indoor 87°FDB/80°FWB (30.5°CDB/26.7°CWB) outdoor 87°FDB(30.5°CDB) heating: indoor 32°FDB (0°CDB) outdoor 32°FDB (0°CDB)/28°FDB(-2°CWB), Connected outdoor unit is PURY-P120TJMU/YJMU-A(-BS) Piping length: 24.6 feet (7.5m) Height difference : 0 feet (0m)
	2. This value shows the data per unit.
	3. Sound pressure level is the data that was obtained in anechoic room by the following conditions: The measuring point is 4.9feet (1.5m) from the bottom of the unit that has 6.6feet (2m) outlet duct and 6.6feet (2m) intake duct.
	4. When combining the drain pipes, ensure that collected pipes are 3-15/16inch(10cm) lower than the unit body's drain port.
	5. Install BC controller in a location where refrigerant flow sound emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background sound, position the BC controller at least 16.4feet(5m) away from any indoor units.)
	6. When connecting the indoor unit to the BC controller, the optional twinning pipe shall be installed. (Refer to Figure1, Figure2, and Table1)
	7. The choice of indoor unit operation mode is limited to auto mode.

2. SPECIFICATIONS

Model			CMB-P106NU-G	CMB-P108NU-G
Number of branches			6	8
Power source			1-phase 208/230V 60Hz	----
Power input (208/230)	Cooling	kW	0.086	0.112
	Heating		0.040	0.053
Current (208/230)	Cooling	A	0.41/0.37	0.54/0.49
	Heating		0.19/0.17	0.25/0.23
External finish			Galvanized steel plate (Lower part drain pan :Pre-coated galvanized sheets + powder coating)	
Connectable outdoor unit			PURY-P120TJMU-A(-BS), PURY-P120YJMU-A(-BS)	
Indoor unit capacity connectable to 1 branch	kW		Model P54 or smaller (Use optional joint pipe combing 2 branches when the total unit capacity exceeds P55.) (Use the reducer (standard accessory) when the indoor unit Model 18 or smaller is connected.)	
External dimension H x W x D	in. (mm)		11-3/16 x 25-17/32 x 17-1/32 (284 x 648 x 432)	
Refrigerant piping diameter	Connectable outdoor unit capacity		To outdoor unit	
			High press. pipe	Low press. pipe
		to P120	3/4 (19.05)	1-1/8 (28.58)
		in. (mm) O.D.	Brazed	Brazed
			From BC Controller to PEFY-AF-CFMR Indoor Unit	
			Liquid pipe	Gas pipe
			3/8 (9.52) Flare	5/8 (15.88) Flare
		in. (mm) O.D.	(1/4 (6.35) with attached reducer used.)	(1/2 (12.7) with attached reducer used, 3/4 (19.05) and 7/8 (22.2) with optional joint pipe used.)
Field drain pipe size		in. (mm) O.D.	1-1/4 (32)	1-1/4 (32)
Net weight		lbs (kg)	76 (34)	84 (38)
Accessories			Drain Connection pipe (with flexible hose and insulation)	Drain Connection pipe (with flexible hose and insulation)
			Reducer	Reducer
Note:			1. Installation/foundation work, electrical connection work, duct work, insulation work, power source switch, and other items are not specified in this specifications.	
			2. The equipment is for R410A refrigerant.	
			3. Install this product in a location where noise (refrigerant noise) emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background noise,position the BC CONTROLLER at least 5m away from any indoor units.)	
			4. The data presented is based on a specific combination.	

BC Controller to PEFY-AF1200CFMR

	Main Coil Refrigerant Piping Dimensions	Reheat Coil Refrigerant Piping Dimensions
Liquid (High Pressure)	3/8" / 9.52 mm	3/8" / 9.52 mm
Gas (Low Pressure)	7/8" / 22.2 mm	7/8" / 22.2 mm

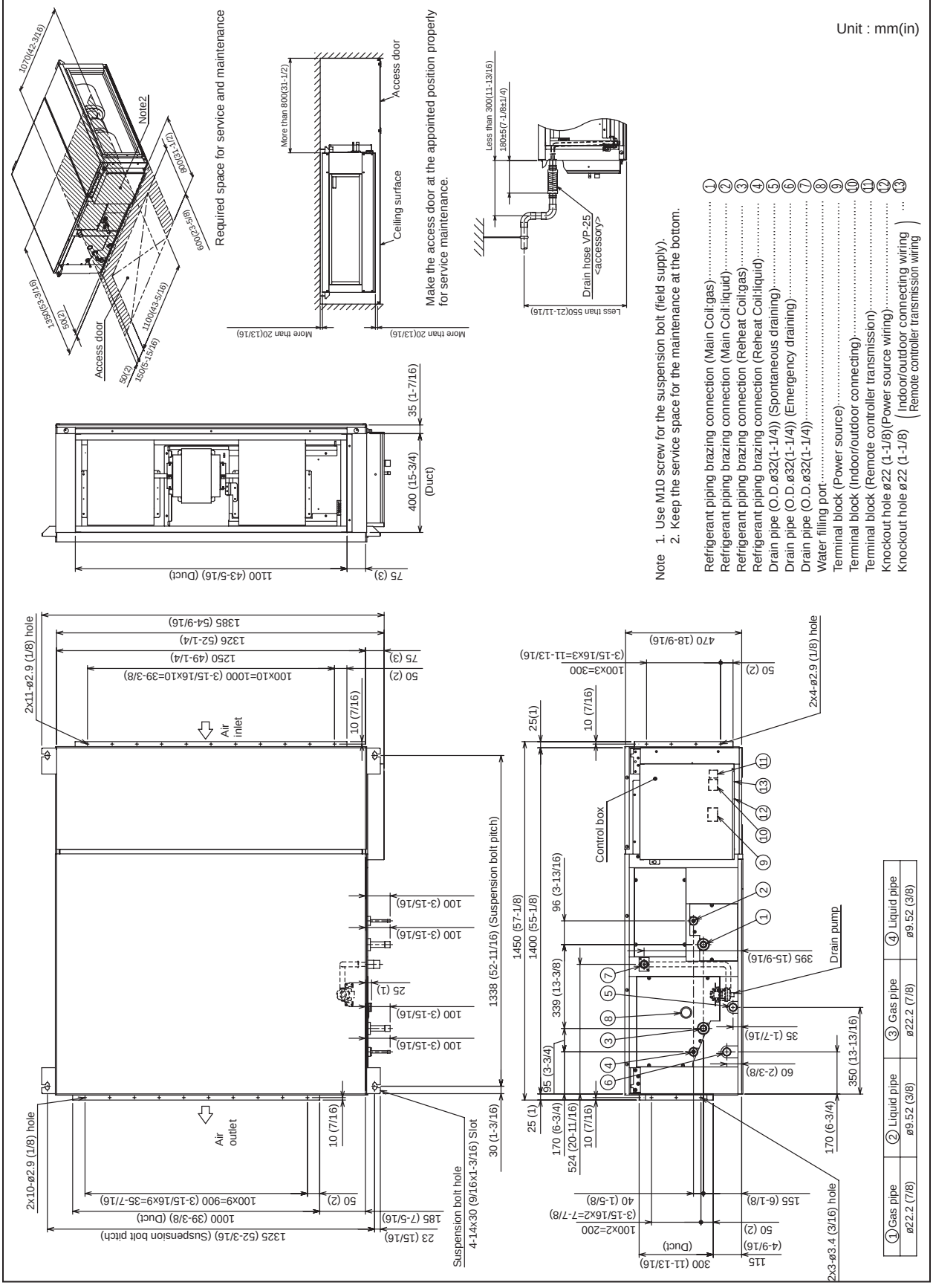


Number of Connection Pipes

Outdoor model	Main	Reheat
PURY-P120TJMU/YJMU (-BS)	4	2

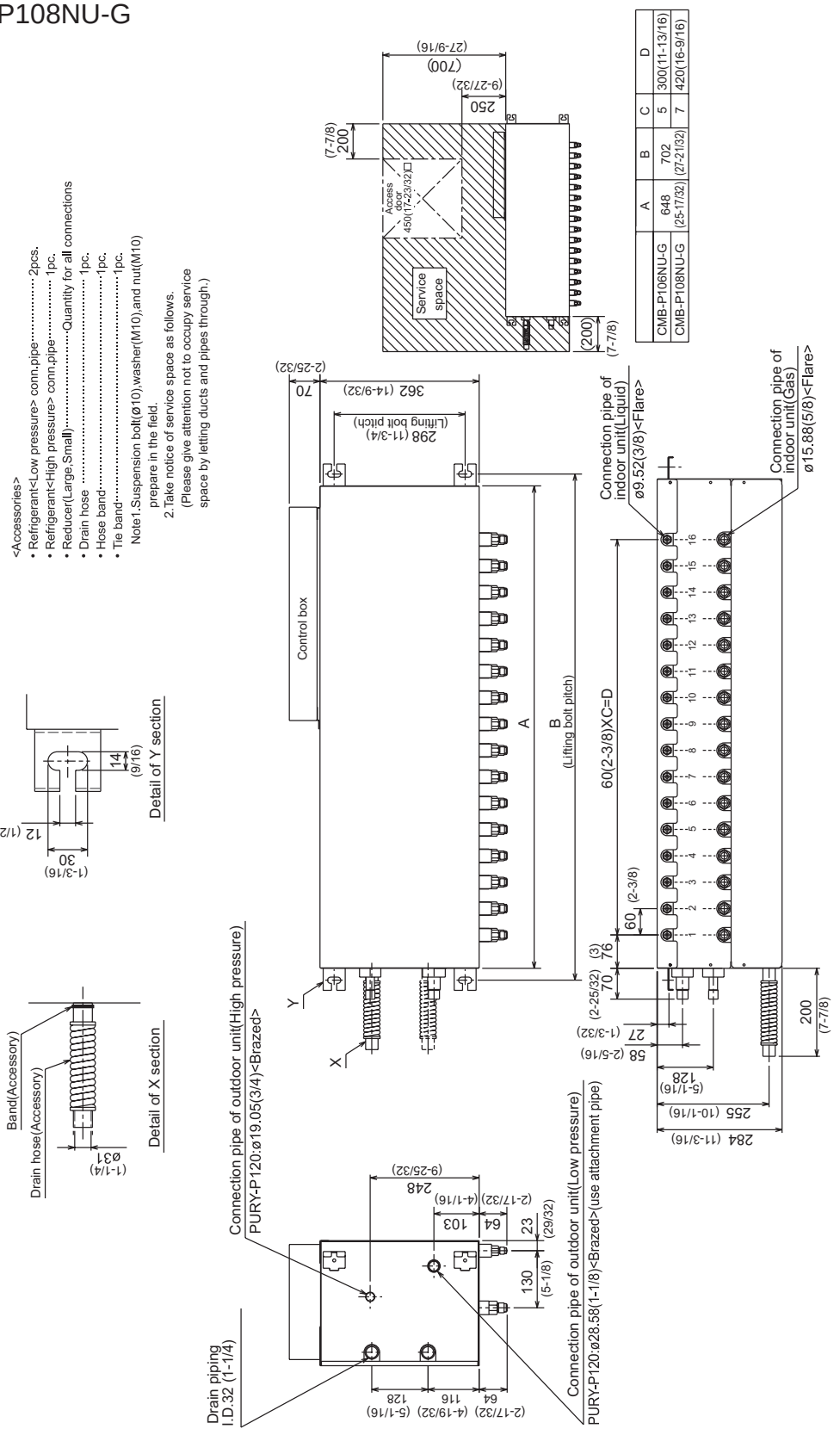
PEFY-AF1200CFMR

Unit : mm(in)



BC Controllers
CMB-P106NU-G
CMB-P108NU-G

Unit : mm(in)


<Accessories>
• Refrigerant<Low pressure> conn.pipe ..... 2pcs.
• Refrigerant<High pressure> conn.pipe ..... 1pc.
• Reducer(Large,Small) ..... Quantity for all connections
• Drain hose ..... 1pc.
• Hose band ..... 1pc.
• Tie band ..... 1pc.
Note1.Suspension bolt(ø10),washer(M10),and nut(M10) prepare in the field.
2.Take notice of service space as follows.
(Please give attention not to occupy service space by letting ducts and pipes through.)
Detail of Y section
Detail of X section
Band(Accessory)
Drain hose(Accessory)
Control box
Service space
Access door
Connection pipe of outdoor unit(High pressure) PURY-P120:ø19.05(3/4)<Brazed>
Connection pipe of outdoor unit(Low pressure) PURY-P120:ø28.58(1-1/8)<Brazed>(use attachment pipe)
Drain piping I.D.32 (1-1/4)
Connection pipe of indoor unit(Liquid) ø9.52(3/8)<Flare>
Connection pipe of indoor unit(Gas) ø15.88(5/8)<Flare>
60(2-3/8)XC=D
A
B (Lifting bolt pitch)
Lifting bolt pitch
CMB-P106NU-G 648 (25-17/32) 702 (27-21/32) 5 300(11-13/16)
CMB-P108NU-G 648 (25-17/32) 702 (27-21/32) 7 420(16-9/16)

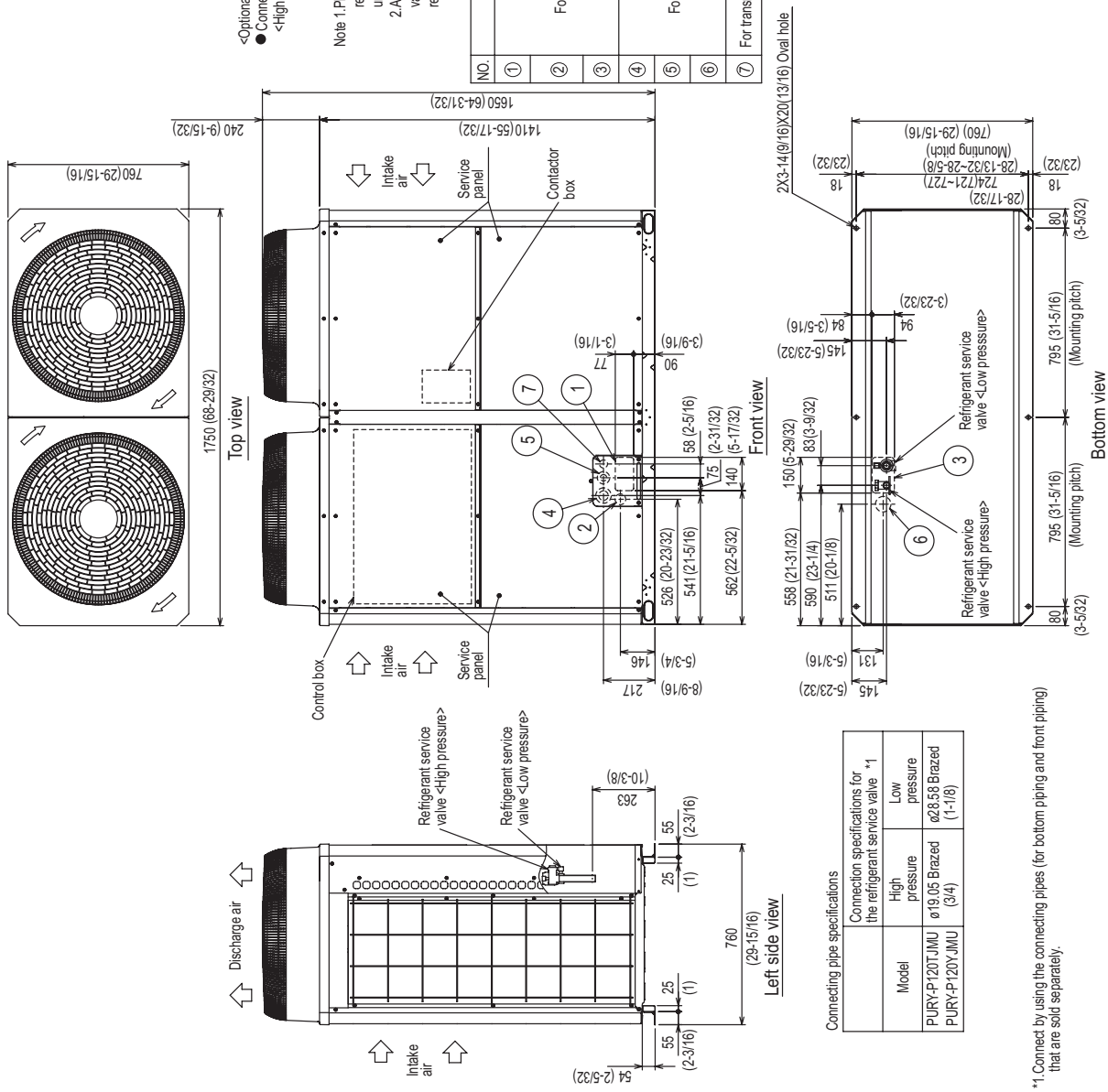
PURY-P120TJMU-A(-BS)
PURY-P120YJMU-A(-BS)

Unit : mm(in.)

<Optional parts>
● Connecting pipe
<High pressure> · Pipe(ID⌀25.4(1)XOD⌀19.05(3/4))·····P120 1 pc.
· Elbow(ID⌀19.05(3/4)XOD⌀19.05(3/4))·····P120 1 pc.

Note 1.Please refer to the next page for information regarding necessary spacing around the unit and foundation work.
2.At brazing of pipes,wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).

NO.	Usage		Specifications
①	For pipes	Front through hole	140 X 77 Knockout hole (5-17/32) (3-1/16)
②		Front through hole (Uses when twinning kit (optional parts) is mounted.)	ø45 Knockout hole (1-25/32)
③		Bottom through hole	150 X 94 Knockout hole (5-29/32) (3-23/32)
④	For wires	Front through hole	ø62.7 or ø34.5 Knockout hole (2-15/32) (1-3/8)
⑤		Front through hole	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑥		Bottom through hole	ø65 Knockout hole (2-9/16)
⑦	For transmission cables	Front through hole	ø34 Knockout hole (1-11/32)



Connecting pipe specifications

Model	Connection specifications for the refrigerant service valve *1	
	High pressure	Low pressure
PURY-P120TJMU PURY-P120YJMU	ø19.05 Brazed (3/4)	ø28.58 Brazed (1-1/8)

*1.Connect by using the connecting pipes (for bottom piping and front piping) that are sold separately.

PURY-P120TJMU-A(-BS)
PURY-P120YJMU-A(-BS)

Unit : mm(in.)

1.Required space around the unit

●In case of single installation

① Secure enough space around the unit as shown in the figure below.

- With a space of at least 300mm(11-13/16) to the wall on the back of the unit
- With a space of at least 100mm(3-15/16) to the wall on the back of the unit

② When the height of the walls on the front,back or on the sides<H> exceeds the wall height limit as defined below add the height that exceeds the height limit <h> to the figures that are marked with an asterisk.

●In case of collective installation

① When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and walkway between groups of units as shown in the figures below.
② At least two sides must be left open.
③ As with the single installation, add the height that exceeds the height limit<h> to the figures that are marked with an asterisk.
④ If there is a wall at both the front and the rear of the unit, install up to three units consecutively in the side direction and provide a space of 1000mm or more as inlet space/ passage space for each three units.

2.Foundation work

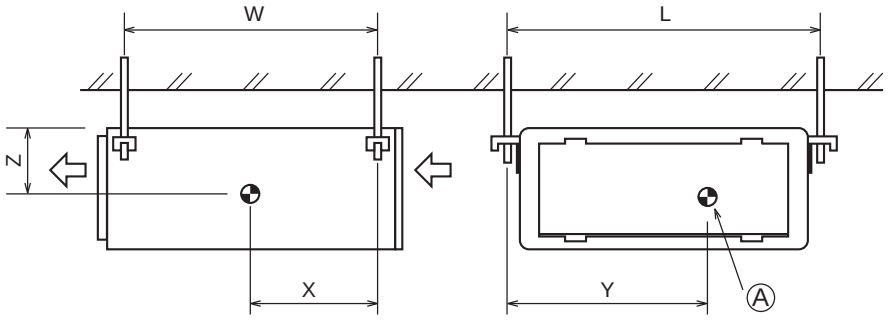
① Take into consideration the surface strength,water drainage route, piping route,and wiring route when preparing the installation site. <Note that the drain water comes out of the unit during operation.>
② Build the foundation in such way that the corner of the installation leg is securely supported as shown in the right figure.(Fig.A) When using a rubber isolating cushion, please ensure it is large enough to cover the entire width of each of the unit's legs.
③ The protrusion length of the anchor bolt must not exceed 30mm(1-3/16).(Fig.A)
④ Use four fixing plates as shown in the right figure <field supply required> when using post-installed anchor bolts.(Fig.B)
⑤ To prevent small animals and water and snow from entering the unit and damaging its parts, close the gap around the edges of through holes for pipes and wires with filler plates <field supply required>.
⑥ When the pipes or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.
⑦ Refer to the Installation Manual when installing units on an installation base.

Fig.A

Fig.B

4. CENTER OF GRAVITY

PEFY-AF1200CFMR

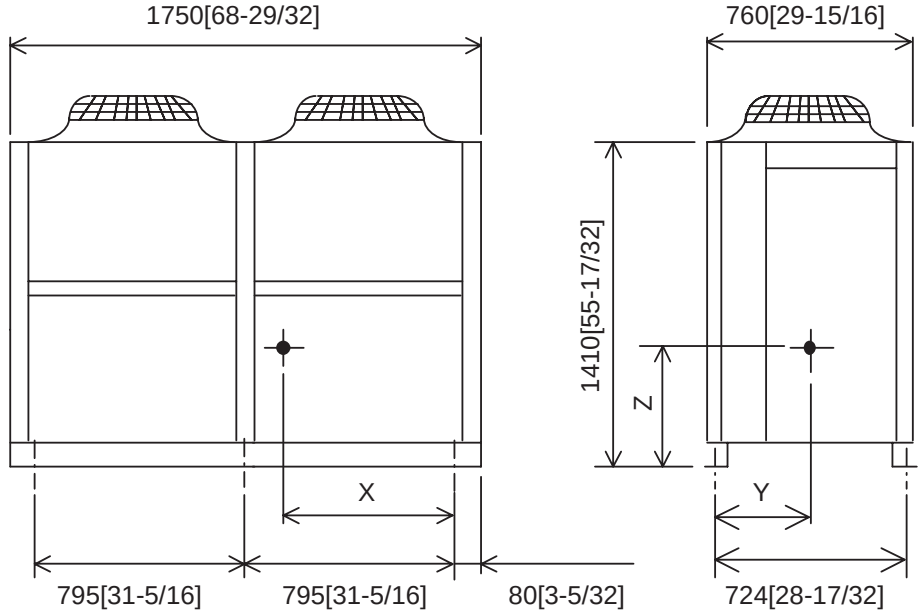


Ⓐ Center of gravity

Model Name	W (in. [mm])	L (in. [mm])	X (in. [mm])	Y in. (mm)	Z in. (mm)	Product Weight (lbs. [kg])
PEFY-AF1200CFMR	52-11/16 (1,338)	52-3/16 (1,325)	28-3/4 (730)	26-5/8 (675)	9-1/2 (240)	309 (140)

PURY-P120TJMU-A(-BS)
PURY-P120YJMU-A(-BS)

Unit : mm[in.]

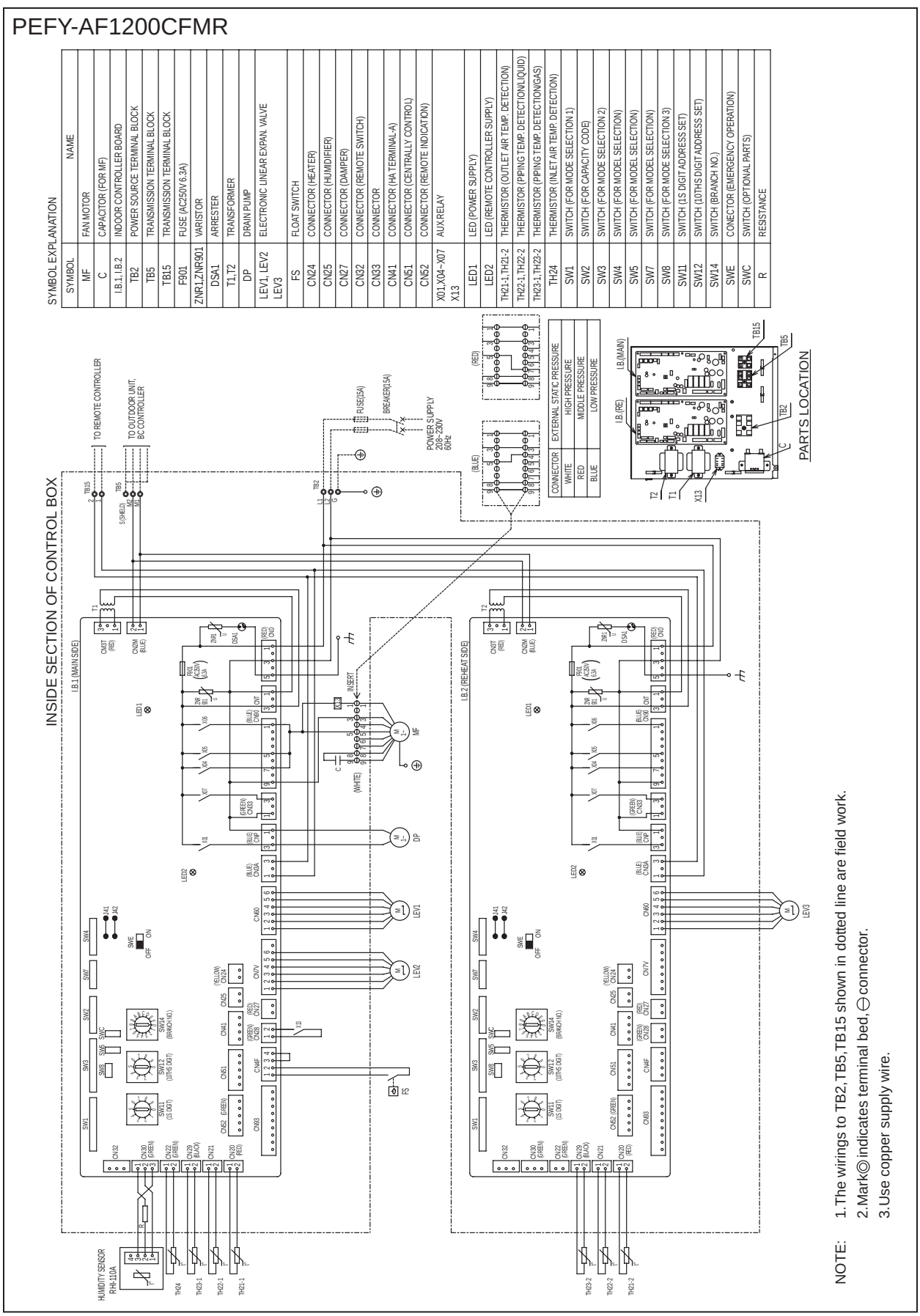


Model name	X	Y	Z
PURY-P120TJMU-A(-BS)	28-19/32 (726)	12-17/32 (318)	26-10/32 (668)
PURY-P120YJMU-A(-BS)	29-25/32 (756)	12-7/32 (310)	25-24/32 (654)

PEFY-AF1200CFMR

SYMBOL EXPLANATION

SYMBOL	NAME
MF	FAN MOTOR
C	CAPACITOR (FOR MF)
I.B.1, I.B.2	INDOOR CONTROLLER BOARD
TB2	POWER SOURCE TERMINAL BLOCK
TB5	TRANSMISSION TERMINAL BLOCK
TB15	TRANSMISSION TERMINAL BLOCK
F901	FUSE (AC250V 6.3A)
ZNR1,ZNR901	VARISTOR
DSA1	ARRESTER
T1,T2	TRANSFORMER
DP	DRAIN PUMP
LEV1, LEV2 LEV3	ELECTRONIC LINEAR EXPAN. VALVE
FS	FLOAT SWITCH
CN24	CONNECTOR (HEATER)
CN25	CONNECTOR (HUMIDIFIER)
CN27	CONNECTOR (DAMPER)
CN32	CONNECTOR (REMOTE SWITCH)
CN33	CONNECTOR
CN41	CONNECTOR (HA TERMINAL-A)
CN51	CONNECTOR (CENTRALLY CONTROL)
CN52	CONNECTOR (REMOTE INDICATION)
X01,X04~X07 X13	AUX.RELAY
LED1	LED (POWER SUPPLY)
LED2	LED (REMOTE CONTROLLER SUPPLY)
TH21-1,TH21-2	THERMISTOR (OUTLET AIR TEMP. DETECTION)
TH22-1,TH22-2	THERMISTOR (PIPING TEMP. DETECTION/LIQUID)
TH23-1,TH23-2	THERMISTOR (PIPING TEMP. DETECTION/GAS)
TH24	THERMISTOR (INLET AIR TEMP. DETECTION)
SW1	SWITCH (FOR MODE SELECTION 1)
SW2	SWITCH (FOR CAPACITY CODE)
SW3	SWITCH (FOR MODE SELECTION 2)
SW4	SWITCH (FOR MODE SELECTION)
SW5	SWITCH (FOR MODE SELECTION)
SW7	SWITCH (FOR MODE SELECTION)
SW8	SWITCH (FOR MODE SELECTION 3)
SW11	SWITCH (1S DIGIT ADDRESS SET)
SW12	SWITCH (10THS DIGIT ADDRESS SET)
SW14	SWITCH (BRANCH NO.)
SWE	CONECTOR (EMERGENCY OPERATION)
SWC	SWITCH (OPTIONAL PARTS)
R	RESISTANCE



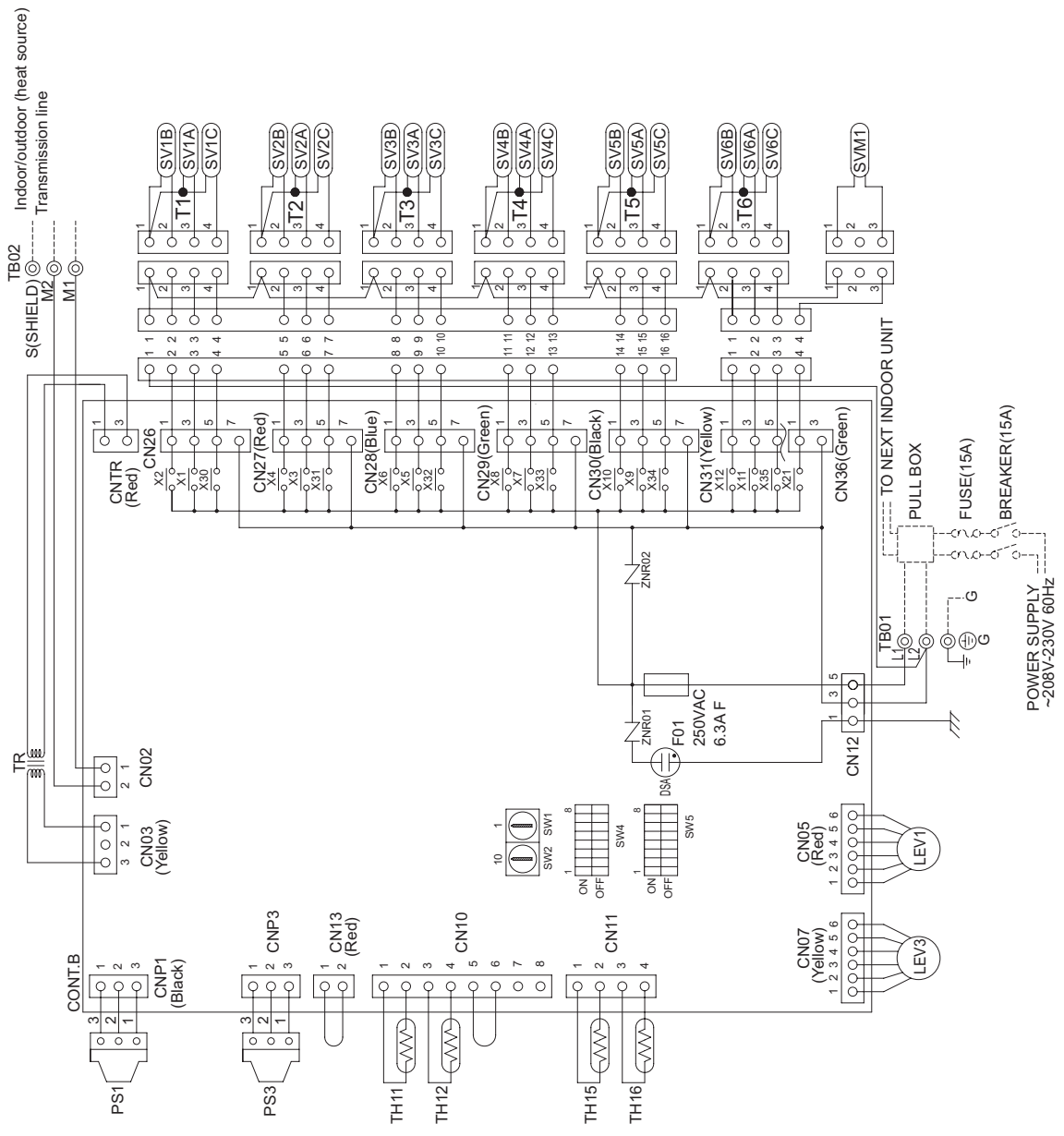
NOTE: 1. The wirings to TB2, TB5, TB15 shown in dotted line are field work.
2. Mark◎indicates terminal bed, ⊖connector.
3. Use copper supply wire.

BC Controller CMB-P106NU-G

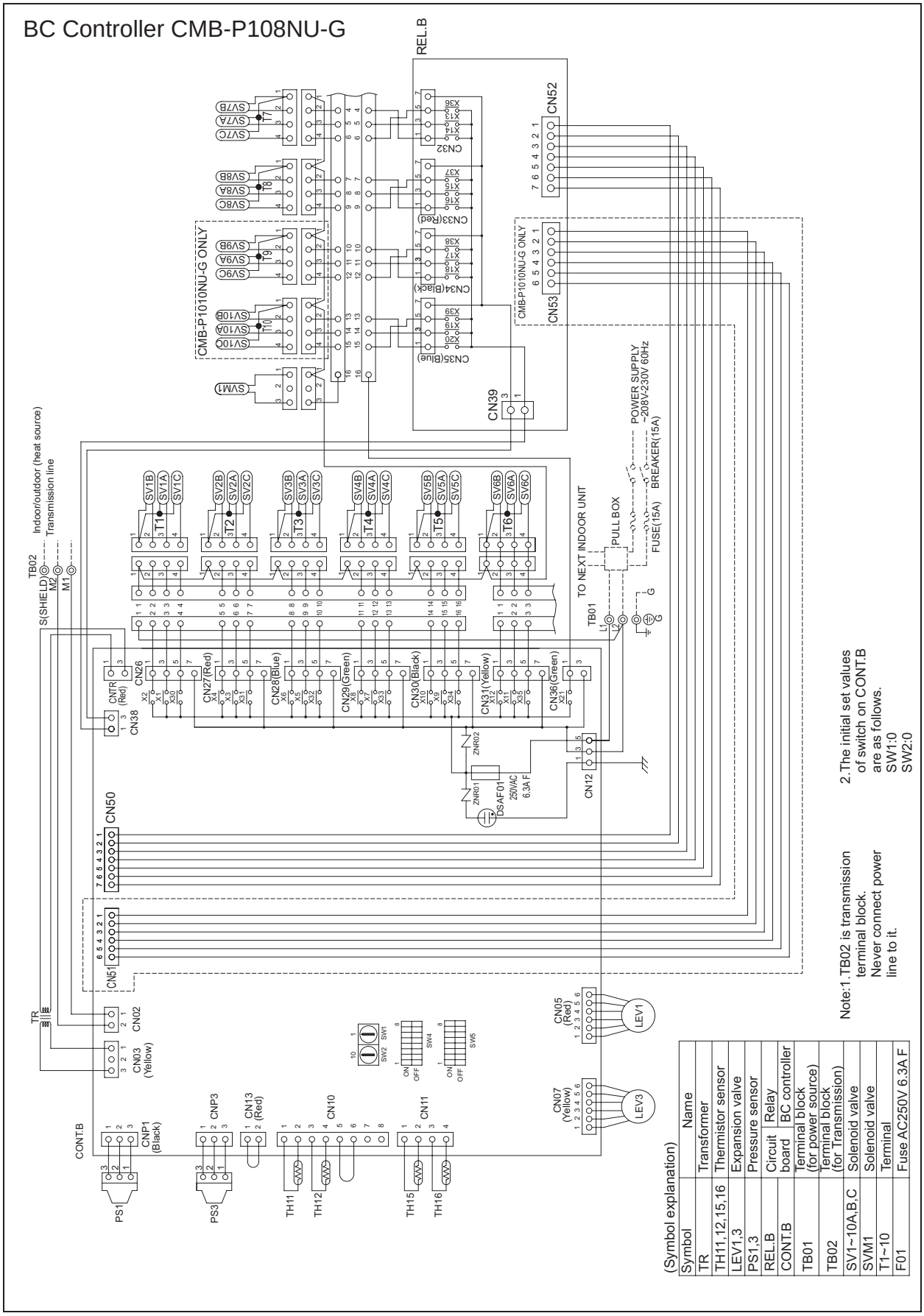
(Symbol explanation)

Symbol	Name
TR	Transformer
TH11,12,15,16	Thermistor sensor
LEV1,3	Expansion valve
PS1,3	Pressure sensor
CONT.B	Circuit board / BC controller
TB01	Terminal block (for power source)
TB02	Terminal block (for Transmission)
SV1~6A,B,C	Solenoid valve
SVM1	Solenoid valve
T1~6	Terminal
F01	Fuse AC250V 6.3A F

Note:1.TB02 is transmission terminal block. Never connect power line to it.
2.The initial set values of switch on CONT.B are as follows.
SW1:0
SW2:0



BC Controller CMB-P108NU-G



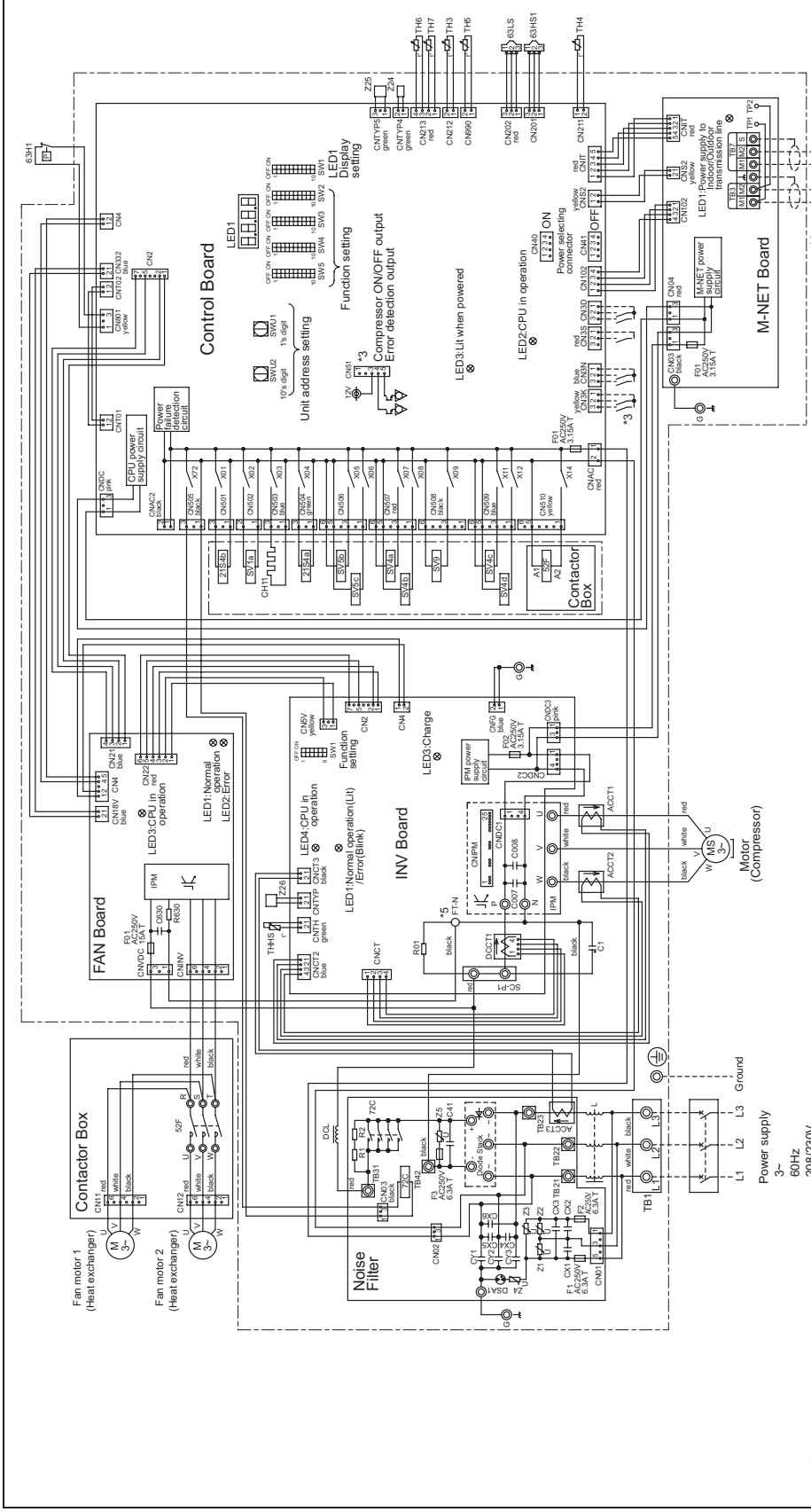
Note:1.TB02 is transmission terminal block. Never connect power line to it.

2.The initial set values of switch on CONT.B are as follows.
SW1:0
SW2:0

(Symbol explanation)

Symbol	Name
TR	Transformer
TH11,12,15,16	Thermistor sensor
LEV1,3	Expansion valve
PS1,3	Pressure sensor
REL.B	Circuit board Relay
CONT.B	BC controller
TB01	Terminal Block (for power source)
TB02	Terminal block (for Transmission)
SV1~10A,B,C	Solenoid valve
SVM1	Solenoid valve
T1~10	Terminal
F01	Fuse AC250V 6.3A F

PURY-P120TJMU-A(-BS)

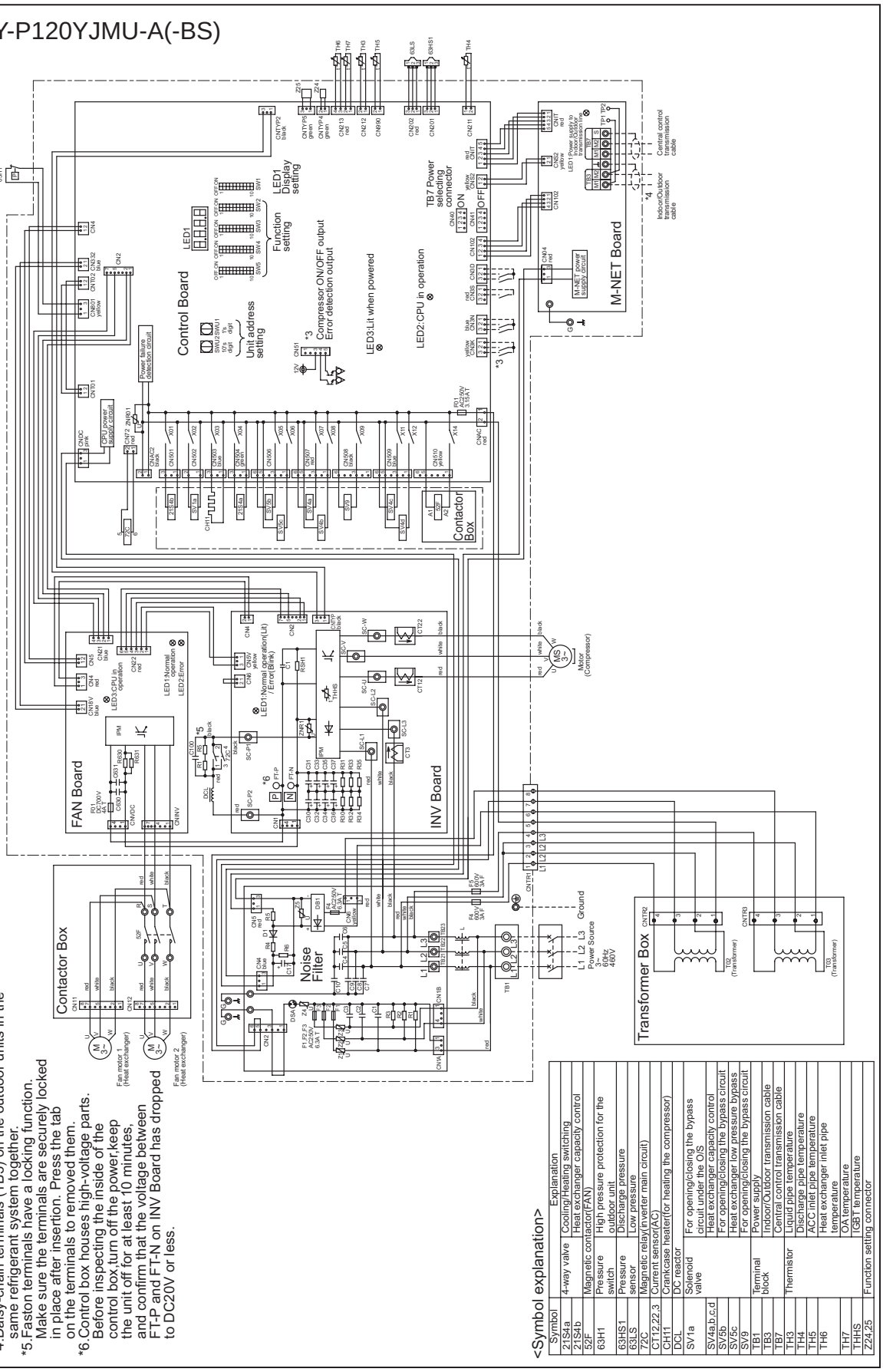


<Symbol explanation>

Symbol	Explanation	Symbol		Explanation
21S4a	Cooling/Heating switching	TB1	Terminal block	Power supply
21S4b	Heat exchanger capacity control	TB3		Indoor/Outdoor transmission cable
52F	Magnetic contactor(FAN)	TB7		Central control transmission cable
63H1	Pressure switch	TH3	Thermistor	Liquid pipe temperature
63HS1	Pressure sensor	TH4		Discharge pipe temperature
63LS	Low pressure	TH5		ACC inlet pipe temperature
72C	Magnetic relay(inverter main circuit)	TH6		Heat exchanger inlet pipe temperature
ACCT1,2,3	Current sensor(AC)	TH7		OA temperature
CH11	Crankcase heater(for heating the compressor)	THHS		IGBT temperature
DCCT1	Current sensor(DC)	Z24,25,26	Function setting connector	
DCL	DC reactor			
SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S		
SV4a,b,c,d		Heat exchanger capacity control		
SV5b		For opening/closing the bypass circuit		
SV5c		Heat exchanger low pressure bypass		
SV9		For opening/closing the bypass circuit		

*1. Single-dotted lines indicate wiring not supplied with the unit.
*2. Dot-dash lines indicate the control box boundaries.
*3. Refer to the Data book for connecting input/output signal connectors.
*4. Daisy-chain terminals (TB3) on the outdoor units in the same refrigerant system together.
*5. Faston terminals have a locking function. Make sure the terminals are securely locked in place after insertion. Press the tab on the terminals to removed them.

PURY-P120YJMU-A(-BS)



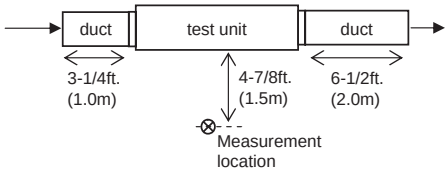
*1. Single-dotted lines indicate wiring not supplied with the unit.
*2. Dot-dash lines indicate the control box boundaries.
*3. Refer to the Data book for connecting input/output signal connectors.
*4. Daisy-chain terminals (TB3) on the outdoor units in the same refrigerant system together.
*5. Faston terminals have a locking function. Make sure the terminals are securely locked in place after insertion. Press the tab on the terminals to removed them.
*6. Control box houses high-voltage parts. Before inspecting the inside of the control box,turn off the power,keep the unit off for at least 10 minutes, and confirm that the voltage between FT-P and FT-N on INV Board has dropped to DC20V or less.

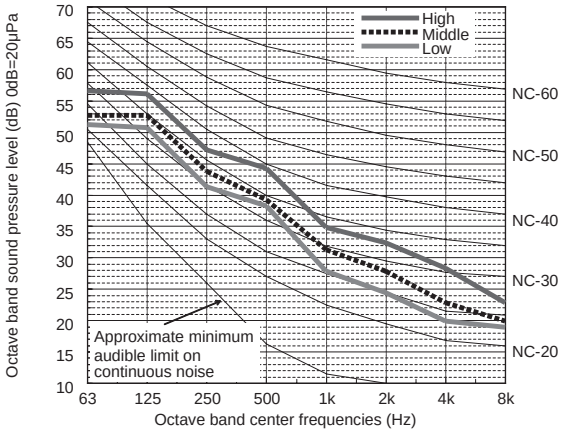
<Symbol explanation>

Symbol		Explanation
21S4a	4-way valve	Cooling/Heating switching
21S4b		Heat exchanger capacity control
52F	Magnetic contactor(FAN)	
63H1	Pressure switch	High pressure protection for the outdoor unit
63HS1	Pressure sensor	Discharge pressure
63LS		Low pressure
72C	Magnetic relay(Inverter main circuit)	
CT12,22,3	Current sensor(A/C)	
CH11	Crankcase heater(for heating the compressor)	
DCL	DC reactor	
SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
SV4a,b,c,d		Heat exchanger capacity control
SV5b		For opening/closing the bypass circuit
SV5c		Heat exchanger low pressure bypass
SV9		For opening/closing the bypass circuit
TB1	Terminal block	Power supply
TB3		Indoor/Outdoor transmission cable
TB7		Central control transmission cable
TH3	Thermistor	Liquid pipe temperature
TH4		Discharge pipe temperature
TH5		ACC inlet pipe temperature
TH6		Heat exchanger inlet pipe temperature
TH7		OA temperature
THHS		IGBT temperature
Z24,25	Function setting connector	

PEFY-AF1200CFMR

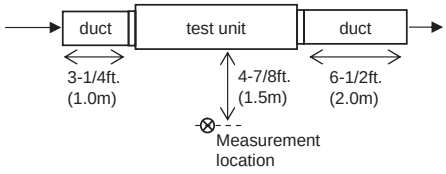
Power source : Single phase 208V 60Hz
External static pressure[in.WG]([Pa])
High : 0.80(200)
Middle : 0.48(120)
Low : 0.28(70)

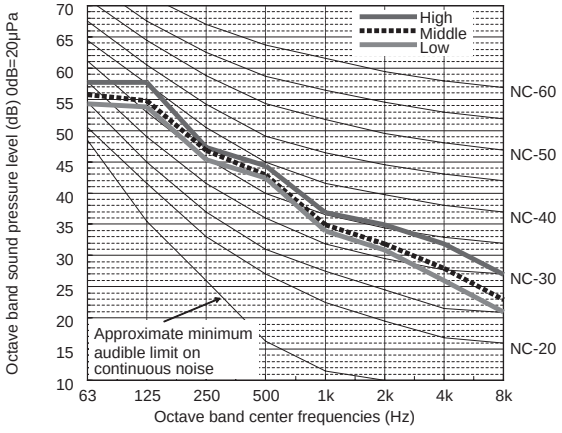




Condition (External static pressure)	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
High	57.0	56.5	47.5	44.5	35.0	32.5	28.5	23.0	46.0
Middle	53.0	53.0	44.0	39.5	31.5	28.0	23.0	20.0	42.0
Low	51.5	51.0	41.5	38.5	28.0	24.5	20.0	19.0	40.0

Power source : Single phase 230V 60Hz
External static pressure[in.WG]([Pa])
High : 0.96(240)
Middle : 0.72(180)
Low : 0.52(130)

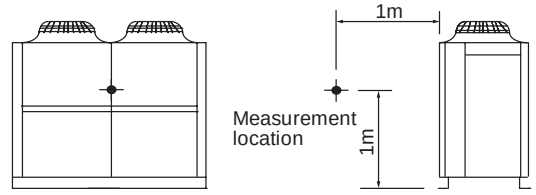


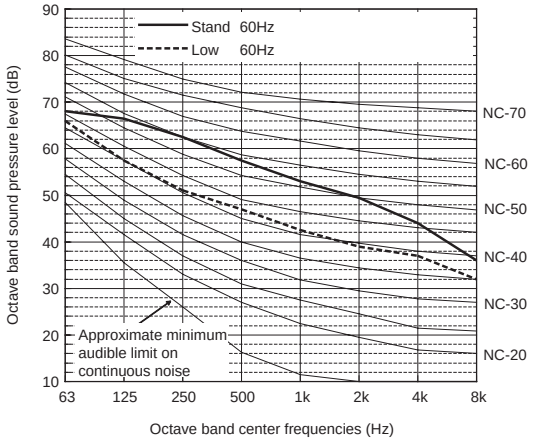


Condition (External static pressure)	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
High	58.0	58.0	47.5	44.5	37.0	35.0	32.0	27.0	47.0
Middle	56.0	55.0	47.0	43.0	35.0	32.0	28.0	23.0	45.0
Low	54.5	54.0	45.5	42.5	34.0	31.0	26.0	21.0	44.0

6. SOUND PRESSURE LEVELS AND NC CURVES

PURY-P120TJMU/YJMU-A(-BS)



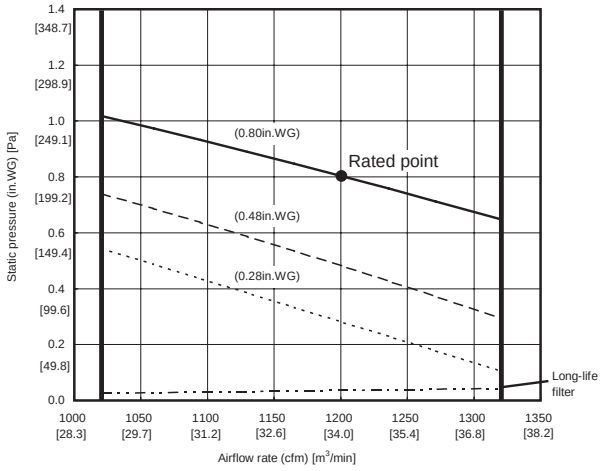


		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
Standard	60Hz	68.0	66.5	62.5	57.5	53.0	49.5	44.0	36.0	60.0
Low noise mode	60Hz	66.0	57.5	51.0	47.0	42.5	39.0	37.0	32.0	50.0

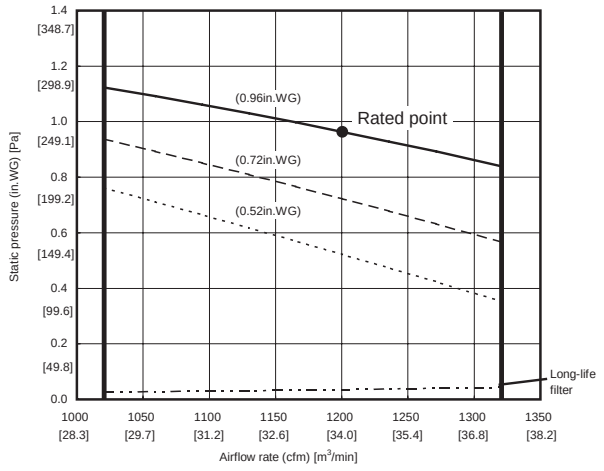
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

PEFY-AF1200CFMR

PEFY-AF1200CFMR
External static pressure : 0.80,0.48,0.28(in.WG),200,120,70[Pa]
Power source : 208V / 60Hz

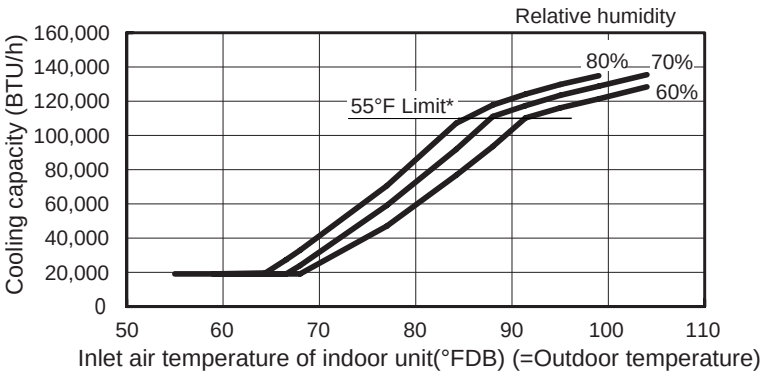


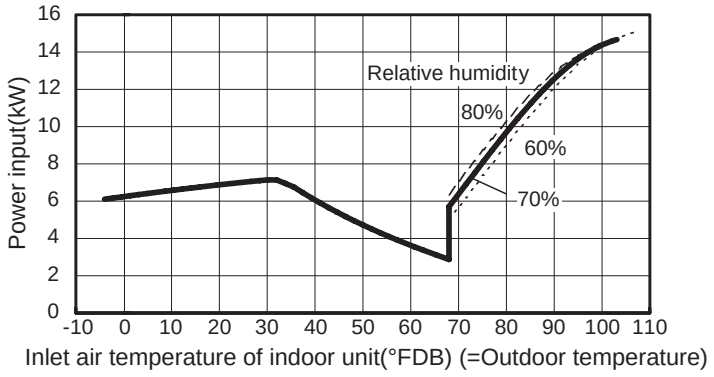
PEFY-AF1200CFMR
External static pressure : 0.96,0.72,0.52(in.WG),240,180,130[Pa]
Power source : 230V / 60Hz



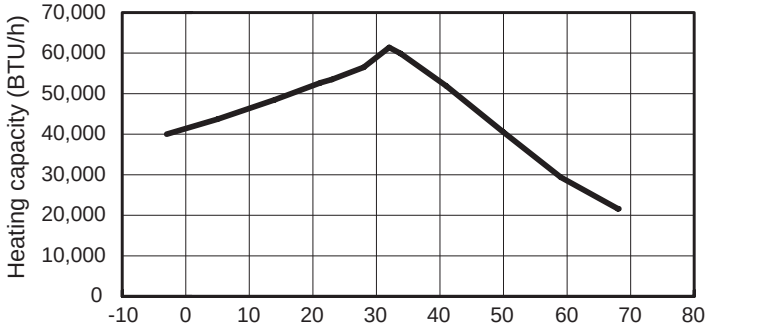
8-1. Correction by Temperature

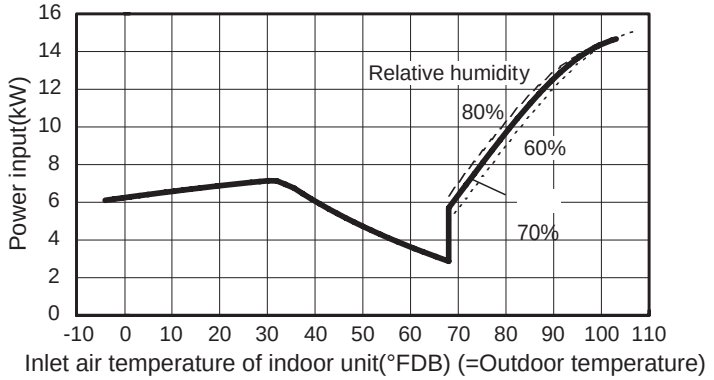
CITY MULTI could have various capacities at different design temperatures. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperatures.





* The temperature of evaporator is not adjusted to 55°F or less.





8-2. Cooling Capacity with PEFY-AF1200CFMR and PURY-P120TJMU/YJMU

CA : Capacity SHC : Sensible Heat Capacity

Outdoor air temperature		Humidity											
		60%				70%				80%			
°FDB	°CDB	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)
104	40	37.6	13.0	128,400	44,300	39.7	11.1	135,500	37,800	-	-	-	-
99	37	35.6	13.6	121,400	46,400	37.8	11.9	128,800	40,500	39.5	10.4	134,900	35,300
95	35	34.0	13.9	116,100	47,300	36.2	12.4	123,400	42,100	38.1	10.9	129,800	37,200
88	31	27.4	12.8	93,500	43,700	32.6	12.8	111,100	43,700	34.5	11.7	117,800	39,800
77	25	13.8	8.6	47,000	29,300	17.3	8.6	59,100	29,300	20.7	8.6	70,500	29,200
68	20	5.6	5.5	19,100	18,700	7.1	5.1	24,000	17,200	9.7	5.1	32,900	17,300
59	15	5.6	5.5	19,100	18,600	5.6	4.5	19,100	15,500	5.6	3.7	19,100	12,700
55	13	5.6	5.5	19,100	18,600	5.6	4.6	19,100	15,600	5.6	3.8	19,100	13,100

This table shows the capacity in case that the target outlet air temperature of the evaporator is 55°F.
Outdoor air temperature means Inlet air temperature of indoor unit in the table above.

8-3. Heating Capacity with PEFY-AF1200CFMR and PURY-P120TJMU/YJMU

SHC : Sensible Heat Capacity

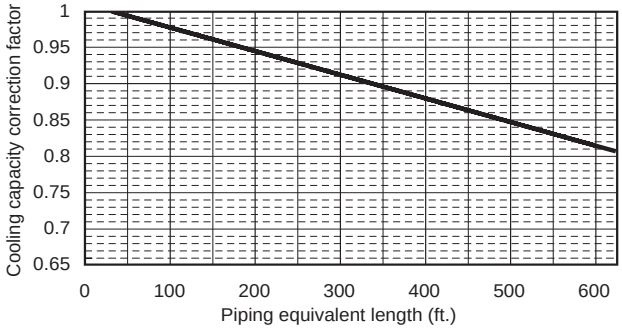
Outdoor air temperature				SHC (Set=63°F*)		SHC (Set=73°F*)		SHC (Set=83°F*)	
°FDB	°CDB	°FWB	°CWB	BTU/h	kW	BTU/h	kW	BTU/h	kW
-3	-19.5	-4	-20	40,000	11.7	40,000	11.7	40,000	11.7
5	-15	4	-16	43,700	12.8	43,700	12.8	43,700	12.8
14	-10	12	-11	48,500	14.2	48,500	14.2	48,500	14.2
23	-5	21	-6	50,200	14.7	53,500	15.7	53,500	15.7
32	0	29	-2	38,800	11.4	51,400	15.1	61,400	18.0
41	5	37	3	27,600	8.1	40,100	11.8	51,900	15.2
50	10	45	7	21,600	6.3	28,800	8.5	40,500	11.9
59	15	54	12	21,600	6.3	21,600	6.3	29,400	8.6
68	20	62	17	0	0.0	21,600	6.3	21,600	6.3

*There are times when the temperature of supply air does not reach the setting temperature in the low outdoor air temperature.
Outdoor air temperature means Inlet air temperature of indoor unit in the table above.

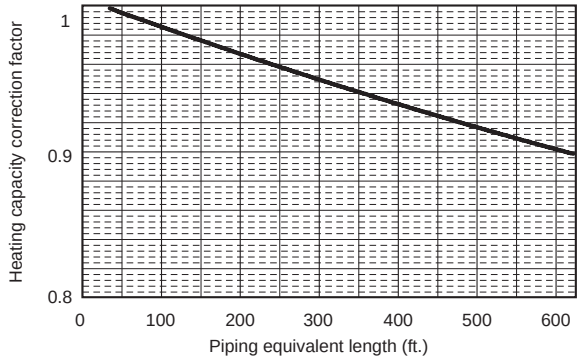
8-4. Correction by Refrigerant Piping Length

CITY MULTI systems can have extended piping lengths if certain limitations are followed, but cooling/heating capacity could be reduced. Using the following correction factor by equivalent piping length shown at 8-4-1 and 8-4-2, capacity can be found. 8-4-3 shows how to obtain the equivalent piping length.

8-4-1. Cooling Capacity Correction (PURY-P120TJMU/YJMU-A(-BS)



8-4-2. Heating Capacity Correction (PURY-P120TJMU/YJMU-A(-BS)



8-4-3. How to obtain the equivalent piping length

PURY-P120TJMU/YJMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.54 x number of bends in the piping) [ft.])
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.47 x number of bends in the piping) [m])

8-5. Correction at Frost and Defrost

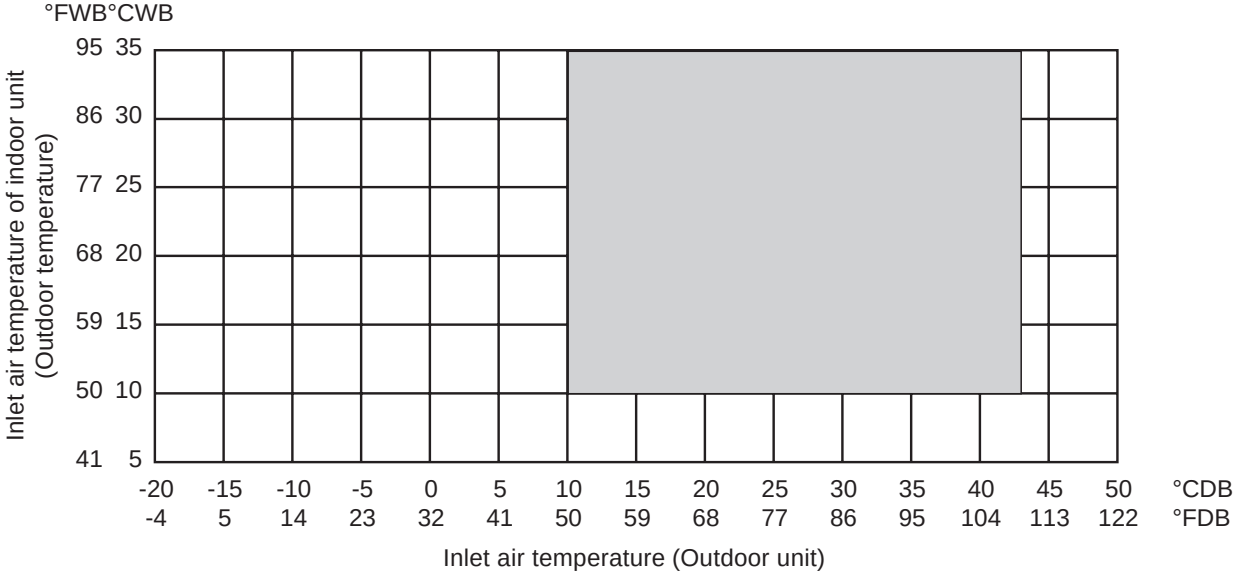
Under certain conditions the outdoor heat exchanger will accumulate frost, initiating the unit's automatic defrost operation. To calculate the heating capacity of the outdoor unit (when correcting for frost and defrost), multiply by the correction factor shown in the table below.

Correction Factor at Frost and Defrost

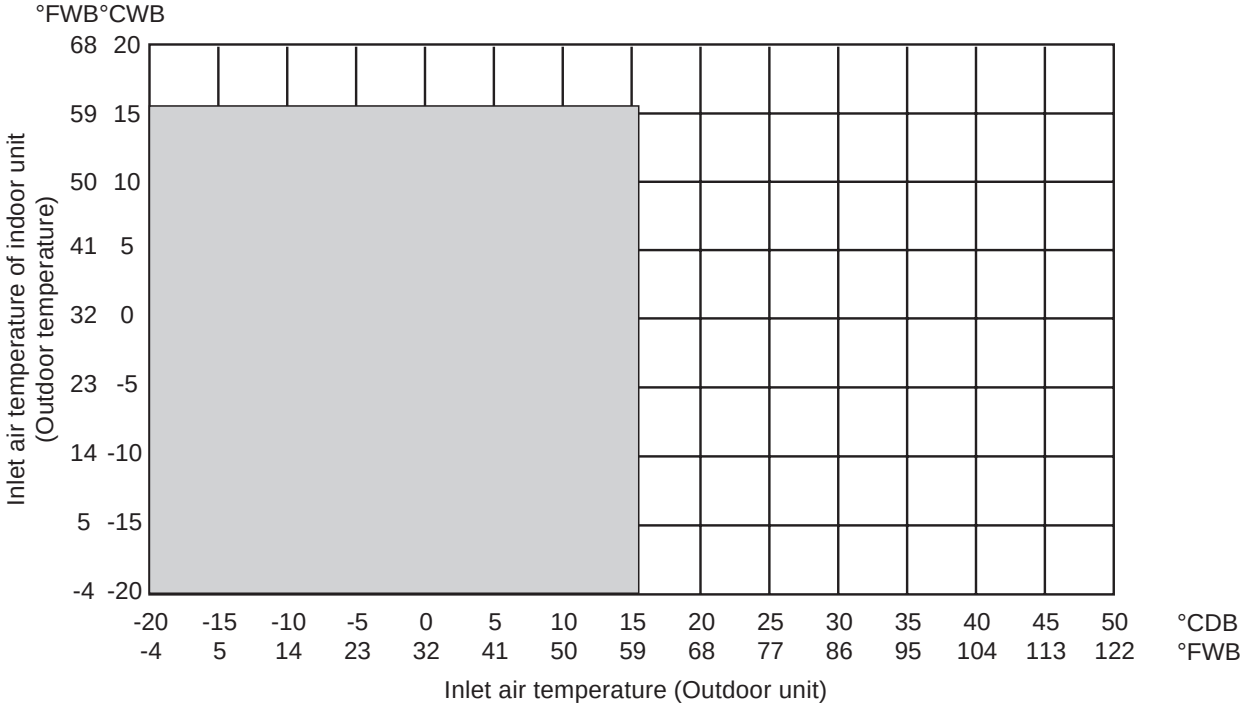
Outdoor inlet air temp. °C	6	4	2	1	0	-2	-4	-6	-8	-10	-20
Outdoor inlet air temp. °F	43	39	36	34	32	28	25	21	18	14	-4
PURY-P120TJMU/YJMU	1.00	0.93	0.85	0.83	0.84	0.86	0.90	0.90	0.92	0.95	0.95

8-6. Operation Temperature Range

Cooling


°FWB°CWB
95 35
86 30
77 25
68 20
59 15
50 10
41 5
Inlet air temperature of indoor unit (Outdoor temperature)
-20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 °CDB
-4 5 14 23 32 41 50 59 68 77 86 95 104 113 122 °FDB
Inlet air temperature (Outdoor unit)

Heating


°FWB°CWB
68 20
59 15
50 10
41 5
32 0
23 -5
14 -10
5 -15
-4 -20
Inlet air temperature of indoor unit (Outdoor temperature)
-20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 °CDB
-4 5 14 23 32 41 50 59 68 77 86 95 104 113 122 °FWB
Inlet air temperature (Outdoor unit)

9-1. Electrical Work

9-1-1. General Cautions

1) Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations, and guidance of each electric power company.

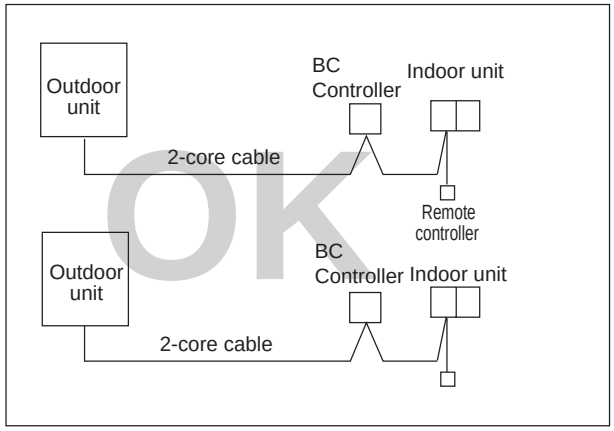
2) Wiring for control (hereinafter referred to as transmission cable) shall be (50mm or more) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission cable and power source wire in the same conduit.)

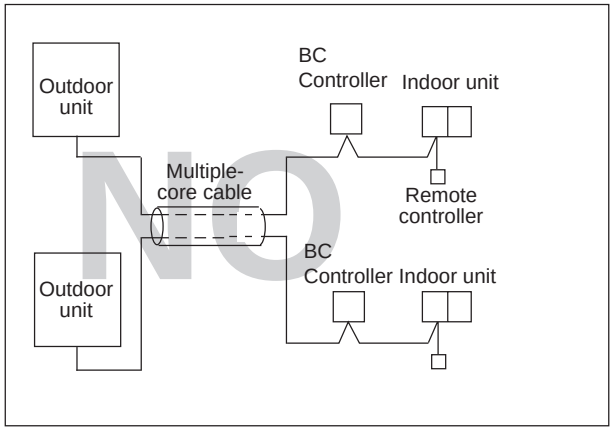
3) Be sure to provide designated grounding work to outdoor unit.

4) Give some allowance to wiring for electrical part box of indoor and outdoor units, because the box is sometimes removed at the time of service work.

5) Never connect 380~415V(220~240V) power source to terminal block of transmission cable. If connected, electrical parts will be burnt out.

6) Use 2-core shield cable for transmission cable. If transmission cables of different systems are wired with the same multiple-core cable, the resultant poor transmitting and receiving will cause erroneous operations.





9-1-2. Power Supplies

Electrical characteristics of Indoor Unit

Symbols: MCA: Min. Circuit Amps (=1.25 x FLA); FLA: Full Load Amps
IFM: Indoor Fan Motor

Model	Unit				IFM
	Hz	Volts	Voltage range	MCA(A)	FLA(A)
PEFY-AF1200CFMR	60Hz	208/230V	188 to 253V	3.99 / 4.31	3.19 / 3.45

Electrical characteristics of BC Controller

Symbols: MCA: Min. Circuit Amps (=1.25 x FLA); FLA: Full Load Amps
RLA: Rated Load Amps

Model	Hz	Volts	Voltage range	MCA(A)	FLA(A)	RLA(A)
CMB-P106NU-G	60Hz	208 / 230V	198 to 253V	0.53 / 0.48	15 / 15	0.42 / 0.38
CMB-P108NU-G				0.68 / 0.61	15 / 15	0.54 / 0.49

Electrical characteristics of Outdoor Unit at Cooling Mode

Symbols: MCA: Min. Circuit Amps (=1.25 x FLA); FLA: Full Load Amps
RLA: Rated Load Amps

Model	Outdoor Units						Compressor	FAN
	Hz	Volts	Voltage range	MCA (A)	Max.Fuse (A)	Recommended Fuse Size (A)	SC(A)	Output (kW)
PURY-P120TJMU-A(-BS)	60Hz	208 / 230V	188 to 253V	49 / 46	70 / 70	50	15	0.92 + 0.92
PURY-P120YJMU-A(-BS)		460V	414 to 506V	23	30	25	7	0.92 + 0.92

9-1-3. Power Cable Specifications

Wire thickness for main power supply, capacities for the switch, and system impedance

3-phase 3-wire, 208/230V, 60Hz	Minimum wire thickness (mm^2/AWG)			Switch(A)		Breaker for wiring (NFB)	Breaker for current leakage
	Main cable	Branch	Ground	Capacity	Fuse		
PURY-P120TJMU-A(-BS)	13.3/6	-	13.3/6	50	50	50	50A 100mA 0.1sec. or less
PEFY-AF1200CFMR	2.1/14	2.1/14	2.1/14	15	15	15	20A 30mA or 100mA 0.1sec. or less

3-phase 3-wire, 460V, 60Hz	Minimum wire thickness (mm^2/AWG)			Switch(A)		Breaker for wiring (NFB)	Breaker for current leakage
	Main cable	Branch	Ground	Capacity	Fuse		
PURY-P120YJMU-A(-BS)	5.3/10	-	5.3/10	25	25	25	25A 30mA or 100mA 0.1sec. or less
PEFY-AF1200CFMR	2.1/14	2.1/14	2.1/14	15	15	15	20A 30mA or 100mA 0.1sec. or less

1) Use dedicated power supplies for the outdoor unit and indoor unit. Ensure OC is wired individually.

2) Take into consideration ambient conditions (ambient temperature,direct sunlight, rain water,etc.) when proceeding with the wiring and connections.

3) The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%.

4) Specific wiring requirements should adhere to the wiring regulations of the region.

5) Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC57). For example, use wiring such as YZW.

6) A switch with at least 3 mm [1/8 in.] contact separation in each pole shall be provided by the Air Conditioner installer.

WARNING

Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.
Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.

CAUTION

A breaker for current leakage must be attached to the power supply. If no earth leakage breaker is installed, it may cause an electric shock.
Do not use anything other than a breaker and fuse with the correct capacity. Using a fuse or wire of too large capacity may cause malfunction or fire.

9-2. M-NET Control

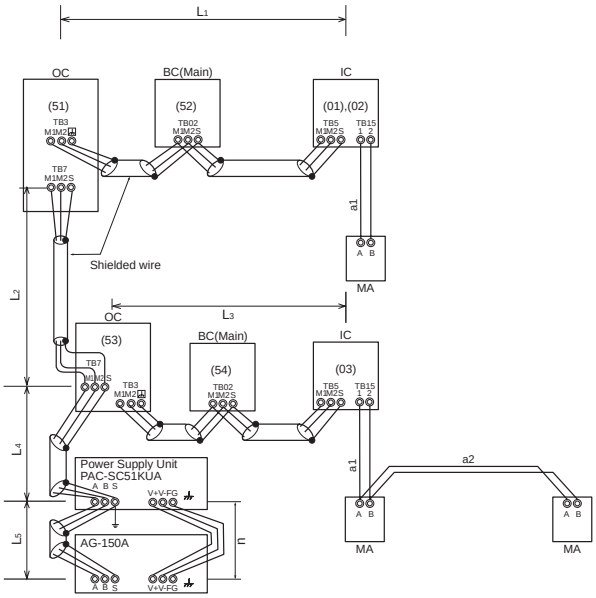
9-2-1. M-NET Control

Transmission cable length limitation

Using MA Remote Controller

Long transmission cable causes voltage down, therefore, the length limitation should be obeyed to secure proper transmission.

Max. length via Outdoor (M-NET cable)	L1+L2+L3, L1+L2+L4+L5, L3+L4+L5	<=500m[1640ft.]	1.25mm^2 [AWG16] or thicker
Max. Total M-NET Wiring	∑ (L1 → 6)	<=2km [6,560ft.]	1.25mm^2 [AWG16] or thicker
Max. length to Outdoor (M-NET cable)	L1, L3, L4, L2+L4, L5	<=200m[656ft.]	1.25mm^2 [AWG16] or thicker
Max. length from MA to Indoor	a1+a2	<=200m[656ft.]	0.3-1.25 mm^2 [AWG22-16]
24VDC to AG-150A	n	<=50m[164ft.]	0.75-2.0 mm^2 [AWG18-14]



OC : Outdoor unit controller; IC: Indoor unit controller; MA: MA remote controller

9-2-2. Transmission Cable Specifications

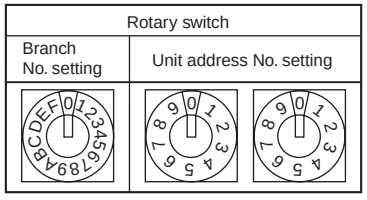
System configuration	For a single-refrigerant system		
Transmission cable length	Less than 120 m [394 ft]		More than 120 m [394 ft]
Facility example (for electrical noise judgment)	Residence or independent store without electrical noise	Building, clinic, hospital or communications station without electrical noise supposedly generated from inverter equipment, private power generator, high-frequency medical equipment, radio-used communications equipment and so on	All facilities
Types of transmission cables	VCTF, VCTFK, CVV, CVS, VVR, VVF, VCT or shielding wire CVVS or CPEVS	Shielding wire CVVS or CPEVS	
Length	Less than 120 m [394 ft]		Less than 200 m [656 ft]

	MA remote controller	M-NET remote controller
Types of cables	Sheathed 2-core cable (unshielded) CVV	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm^2 [AWG22 to 16]	0.3 to 1.25 mm^2 [AWG22 to 16]
Length	Less than 200 m [656 ft]	Add any portion in excess of 10 m [32 ft] to within the longest allowable transmission cable length 200 m [656 ft] (Shielding portion is more than 1.25 mm^2 [AWG16])

CVVS,MVVS : PVC insulated PVC jacketed shielded control cable
CPEVS : PE insulated PVC jacketed shielded communication cable
CVV : PVC insulated PVC sheathed control cable

9-2-3. Address Setting

Switch operation
To include CITY MULTI in a complete system, switch operation for setting the unit address No. and connection No. is required.



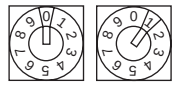
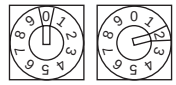
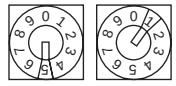
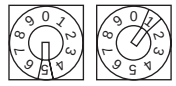
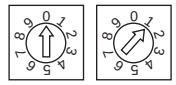
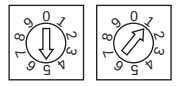
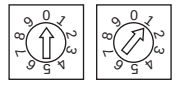
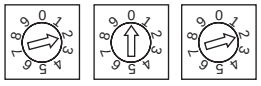
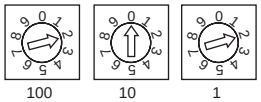
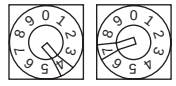
1) Address No. of outdoor unit, indoor unit and remote controller.
The address No. is set at the address setting board.
In the case of R2 system, it is necessary to set the same No. at the branch No. switch of indoor unit as that of the BC controller connected. (When connecting two or more branches, use the lowest branch No.)

2) Caution for switch operations
- Do not use the same port number for both the main and reheat units. Assign different port numbers to each of them.
- Be sure to shut off power source before switch setting. If operated with power source on, switch can not operate properly.
- No units with identical unit address shall exist in one whole air conditioner system. If set incorrectly, the system cannot operate.

3) MA remote controller
- When connecting only one remote controller to one group, it is always the main remote controller.

When connecting two remote controllers to one group, set one remote controller as the main remote controller and the other as the sub remote controller.
- The factory setting is “Main”.
- Refer to the “Instruction Book” that came with the MA remote controller for how to set the switches.

9-2-4. Setting Addresses

Unit		Address setting	Example	Note
Indoor unit		01 ~ 50	Main  Reheat 	Use the most recent address within the same group of indoor units. Different address settings are required for the main and reheat units. Assign an address to the reheat unit that equals the address of the main unit plus 1.
Outdoor unit		51 ~ 99, 100 (Note1)		The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the outdoor units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2) * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller		52 ~ 99, 100		The address of outdoor unit + 1 * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
Local remote controller	ME, LOSSNAY Remote controller (Main)	101 ~ 150	1 Fixed 	The smallest address of indoor unit in the group + 100 * The place of "100" is fixed to "1"
	ME, LOSSNAY Remote controller (Sub)	151 ~ 199, 200	1 Fixed 	The address of main remote controller + 50 * The address automatically becomes "200" if it is set as "00"
System controller	Group remote controller	201 ~ 250	2 Fixed 	The smallest group No. to be managed + 200
	System remote controller	000, 201 ~ 250		
	ON/OFF remote controller	000, 201 ~ 250		The smallest group No. to be managed + 200 * The smallest group No. to be managed is changeable.
	AG-150A G-50A GB-50A	000, 201 ~ 250	0,2 0~5 0~9 100 10 1	
	LMAP03U	201 ~ 250	2 Fixed 	

Note1: To set the address to "100", set it to "50"
Note2: Outdoor units OC and OS in one refrigerant circuit system are automatically detected.
OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.

9-2-5. System Examples

Factory setting

Original switch setting of the outdoors, indoors, controllers and LMAP at shipment is as follows.

- Outdoor unit : Address: 00, CN41: U (Jumper), DipSW2-1: OFF
- Indoor unit : Address: 00
- BC controller : Address: 00
- Remote controller : Address: 100

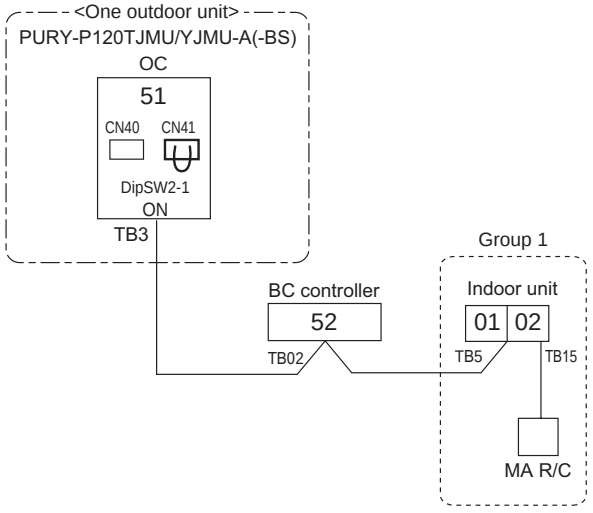
Setting at the site

- DipSW2-1(Outdoor) : When the System Remote Controller is used, all the Dip SW2-1 at the outdoor units should be set to "ON".
- DipSW4-6/6-2 (BC controller) : Set DipSW to the following table setting.

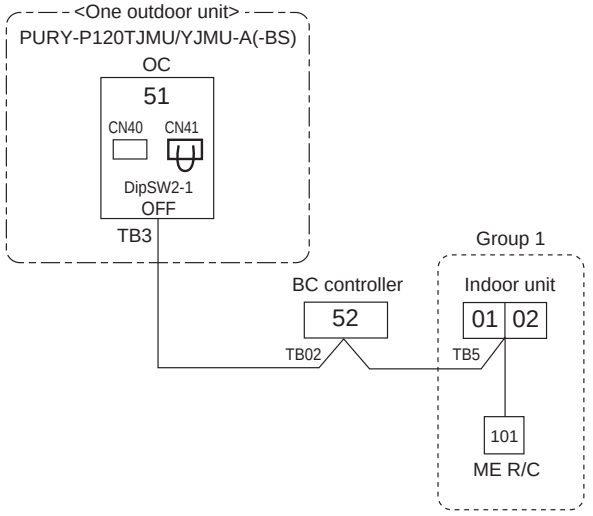
DipSW	Outdoor unit
	PURY-P120TJMU/YJMU-A(-BS)
SW4-6	OFF
SW6-2	ON

- CN40/CN41 : Change jumper from CN41 to CN 40 at outdoor control board will activate central transmission power supply to TB7;
  Power supply unit is recommended to use for a system having more than 1 outdoor unit, because the central transmission power supply from TB7 of one of outdoor units is risking that the outdoor unit failure may let down the whole central control system.

(3)-3-1 MA remote controller



(3)-3-2 ME remote controller



9-3. Piping Design

9-3-1. R410A piping material

Refrigerant pipe for CITY MULTI shall be made of phosphorus deoxidized copper, and has two types.
A. Type-O : Soft copper pipe (annealed copper pipe), can be easily bent by hand.
B. Type-1/2H pipe : Hard copper pipe (Straight pipe), being stronger than Type-O pipe of the same radical thickness.

The maximum operation pressure of R410A air conditioner is 4.30 MPa. The refrigerant piping should ensure the safety under the maximum operation pressure. MITSUBISHI ELECTRIC recommends pipe size as [Table 1-1], or You shall follow the local industrial standard. Pipes of radical thickness 0.7mm or less shall not be used.

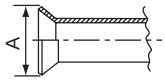
[Table 1-1] Copper pipe size and radial thickness for R410A CITY MULTI.

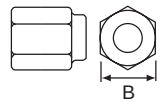
Size (mm)	Size (inch)	Radial thickness (mm)	Pipe type
ø6.35	ø1/4"	0.8	Type-O
ø9.52	ø3/8"	0.8	Type-O
ø12.7	ø1/2"	0.8	Type-O
ø15.88	ø5/8"	1.0	Type-O
ø19.05	ø3/4"	1.2	Type-O
ø19.05	ø3/4"	1.0	Type-1/2H or H
ø22.2	ø7/8"	1.0	Type-1/2H or H
ø25.4	ø1"	1.0	Type-1/2H or H
ø28.58	ø1-1/8"	1.0	Type-1/2H or H
ø31.75	ø1-1/4"	1.1	Type-1/2H or H
ø34.93	ø1-3/8"	1.2	Type-1/2H or H
ø41.28	ø1-5/8"	1.4	Type-1/2H or H

* For pipe sized ø19.05 (3/4") for R410A air conditioner, choice of pipe type is up to you.

Flare

Due to the relative higher operation pressure of R410A compared to R22, the flare connection should follow dimensions mentioned below so as to achieve enough the air-tightness.

Flare pipe	Pipe size	A (For R410A) (mm[in.])
	ø6.35 [1/4"]	9.1
	ø9.52 [3/8"]	13.2
	ø12.70 [1/2"]	16.6
	ø15.88 [5/8"]	19.7
	ø19.05 [3/4"]	24.0

Flare nut	Pipe size	B (For R410A) (mm[in.])
	ø6.35 [1/4"]	17.0
	ø9.52 [3/8"]	22.0
	ø12.70 [1/2"]	26.0
	ø15.88 [5/8"]	29.0
	ø19.05 [3/4"]	36.0

9-3-2. R410A piping design specifications

PURY-P120TJMU/YJMU-A(-BS) + PEFY-AF1200CFMR

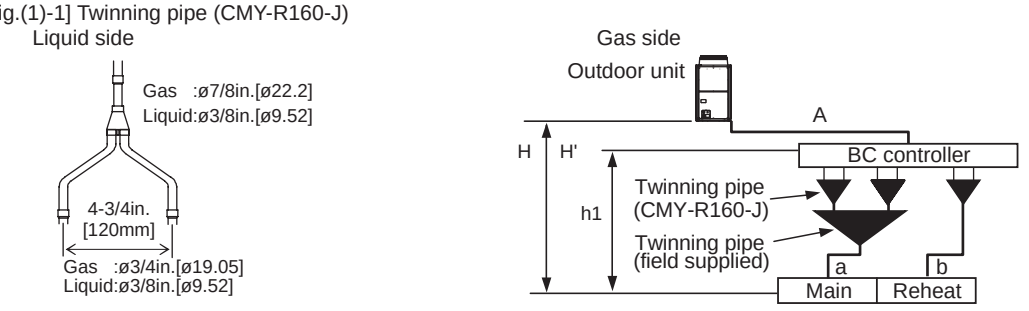
Notes:

1) Use the twinning pipe (CMY-R160-J) and field-supplied twinning pipe to connect between the BC controller and indoor units.

2) Because bends cause pressure loss on transportation of refrigerant, the fewer bends in the design the better;
Piping length needs to consider the actual length and equivalent length which bends are counted.
Equivalent piping length (m) = Actual piping length+"M" x Quantity of bends.

3) Set DIP-SW 6-2 to ON of BC controller. (SW4-6=OFF)

[Fig.(1)-1] Twinning pipe (CMY-R160-J)



[Table (1)-1] Piping length limitation

(m [ft.])

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length	A+a+b	*1	-
Farthest IU from OU	A+a	165 [541']	190 [623']
Distance between OU and BC	A	110 [360'] *1	110 [360'] *1
Farthest IU from BC controller	a	40 [131'] *2	40 [131'] *2
Height between OU and IU (OU above IU)	H	50 [164']	-
Height between OU and IU (OU under IU)	H'	40 [131']	-
Height between IU and BC	h1	15 [49'] (10 [32']) *3	-

OU : Outdoor Unit ; IU : Indoor Unit ; BC : BC controller
*1. Please refer to [Fig.(1)-5]
*2. Farthest Indoor from BC controller "a" can exceed 40m(131ft.) till 60m(197ft.) if no Indoor sized P72, P96 connected. Details refer to [Fig.(1)-4]
*3. Distance of Indoor from BC must be less than 10m(33ft.), if any.

[Table (1)-2] Bends equivalent length "M"

Outdoor Model	M (m/bends [ft./bends])
PURY-P120TJMU/YJMU-A(-BS)	0.47 [1.54']

[Table (1)-3] Piping "A"size selection rule

(mm [in.])

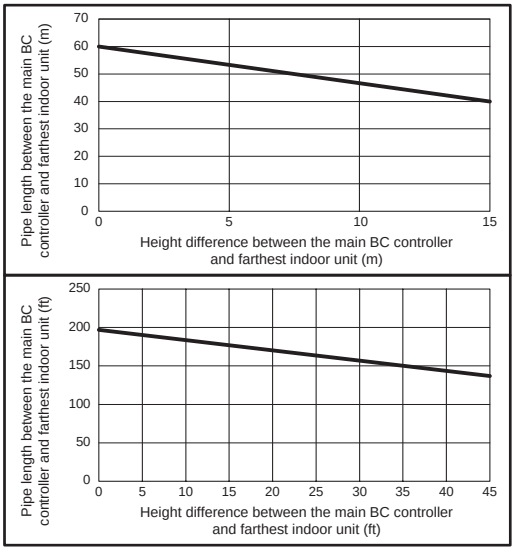
Outdoor Model	Pipe(High pressure)	Pipe(Low pressure)
PURY-P120TJMU/YJMU-A(-BS)	ø19.05 [3/4"]	ø28.58 [1-1/8"]

[Table (1)-4] Piping "a", "b", "c", "d" size selection rule

(mm [in.])

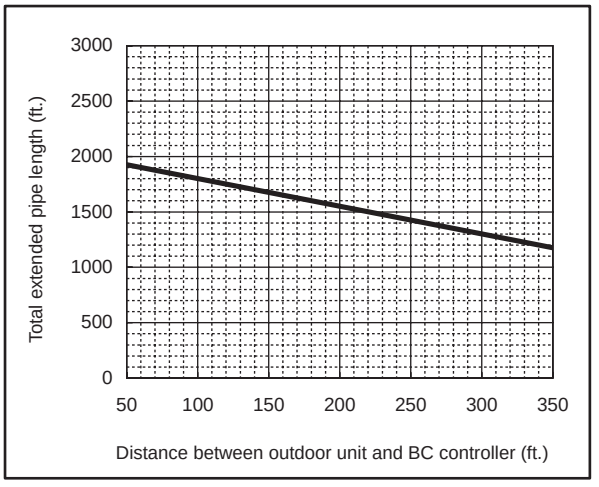
Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
Main, Reheat	ø9.52 [3/8"]	ø22.20 [7/8"]

[Fig.(1)-4] Piping length and height between IU and BC controller

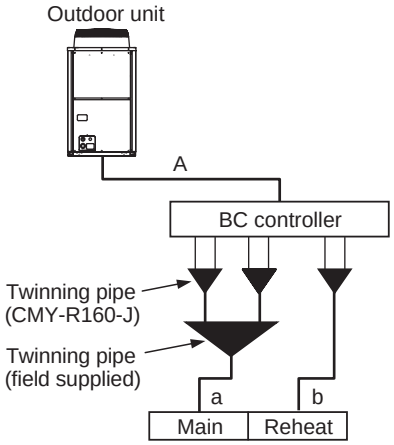


[Fig.(1)-5] Total piping length restricitions

PURY-P120TJMU/YJMU-A(-BS)



Calculation of additional refrigerant to be charged



Amount of additional refrigerant to be charged

- Refrigerant for extended pipes (field piping) is not factory-charged to the outdoor unit. Add an appropriate amount of refrigerant for each pipes on site.
- Record the size of each high pressure pipe and liquid pipe, and the amout of refrigerant that was charged on the outdoor unit for future reference.

Calculating the amount of additional refrigerant to be charged

- The amount of refrigerant to be charged is calculated with the size of the on-site-installed high pressure pipes and liquid pipes, and their length.
- Calculate the amount of refrigerant to be charged according to the formula below.
- Round up the calculation result to the nearest 0.1kg. (i.e., 12.38kg[435.1oz] = 12.4 kg[436oz])

Amount of additional refrigerant to be charged

• Calculating the amount of additional refrigerant to be charged

Additional refrigerant charge	=	High pressure pipe size Total length of ø 19.05mm[3/4 in]	+	Liquid Piping size Total length of ø 9.52mm[3/8 in]	+
(kg)[oz]		(m) × 0.16(kg/m) (ft) × 1.73(oz/ft)		(m) × 0.06(kg/m) (ft) × 0.65(oz/ft)	

Total Outdoor Unit Model Name	Charged amount per BC controller (Standard / Main)	+	Connected Indoor Units	Charged amount
PURY-P120TJMU/YJMU-A(-BS)	4.5 kg[160oz]		PEFY-AF1200CFMR	3.0 kg [106 oz]

• Amount of factory-charged refrigerant

Outdoor unit Model	Charged amount
PURY-P120TJMU/YJMU-A(-BS)	11.8 kg[416oz]

• Sample calculation

A : ø19.05 [3/4"] 40m [131ft.]
a : ø9.52 [3/8"] 18m [59ft.]
b : ø9.52 [3/8"] 18m [59ft.]

Total length for each pipe size : ø19.05 A = 40m [131ft.]
ø9.52 a + b = 36m [118ft.]

Therefore, additional refrigerant charge (kg) = 40 × 0.16 + 36 × 0.06 + 4.5 + 3.0
= 16.06kg
≒ 16.1kg

or

Therefore, additional refrigerant charge (oz) = 131 × 1.73 + 118 × 0.65 + 160 + 106
= 569.33oz
≒ 570oz